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Comparing The Relative Effectiveness Of Function-Based Antecedent And Reinforcement Interventions For Increasing Preschoolers' Appropriate Behavior

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COMPARING THE RELATIVE EFFECTIVENESS OF FUNCTION-BASED ANTECEDENT AND REINFORCEMENT INTERVENTIONS FOR INCREASING PRESCHOOLERS' APPROPRIATE BEHAVIOR

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ABSTRACT

The current study extended current literature regarding using brief functional analysis methodologies to inform function-based intervention for increasing preschool students' academically engaged behavior. Teachers were prompted through brief functional analysis procedures by the researcher. Brief functional analysis results informed two function-based interventions: an antecedent intervention - pre-session non-contingent reinforcement, and a reinforcement intervention – differential reinforcement of alternative behavior. The two interventions were compared according to effectiveness on increasing preschool students' academically engaged behavior and social validity ratings from teachers. Results indicated for all three participants the reinforcement intervention was not only more effective, but also received higher social validity ratings.

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LIST OF ABBREVIATIONS

FBA	Functional Behavior Assessment
FA	Functional Analysis
PB	Problem Behavior
AEB	Academically Engaged Behavior

CHAPTER I - INTRODUCTION

Previous Research

According to the U.S. Department of Health and Human Services (2014), more than 1,000,000 students and pregnant mothers were funded to attend the National Head Start program nationally during the 2013-2014 school year (National and State Data, 2015). Head Start classrooms include children from families considered "at risk" populations. The families of children attending Head Start often struggle with one or more of the following conditions: poverty, poor health, limited parent education, family and housing instability, insufficient English language skills, and a prevalence of crime or violence in and around the home setting (Hoke County Bd. of Educ. v. State, 2012). These conditions lead to children being at risk for academic failure due to socio-economic factors, which may lead to several long-term difficulties.

Problem behaviors demonstrated by young children are often a predictor of patterns of problem behavior and negative academic outcomes later in life (Loeber, Burke, & Pardini, 2009). Problem behavior in the classroom is a documented hindrance to teaching and learning. Love, Chazan-Cohen, Raikes, and Brooks-Gunn (2013) provide evidence supporting early intervention for problem behavior, with data indicating that children who had attended Early Head Start, a Head Start program for children between birth and 3 years, displayed less problem behaviors in Kindergarten than children who had not attended Early Head Start during the year(s) prior to Kindergarten. Other research has concluded that for families of low socio-economic status (SES), children's preschool attendance is correlated with success later in life as well. Children from low SES families who participated in preschool programs were more likely to graduate high school and less

likely to dropout as compared to children from low SES families who did not attend preschool (Reynolds, Temple, Robertson, & Mann, 2001).

Head Start teachers describe referral concerns as patterns of behavior problems that cause damage to property, injury to children, interference with learning, or students socially withdrawing. Common problem behaviors that may result in child referrals can be separated into two categories: internalizing behaviors and externalizing behaviors. Internalizing problem behaviors such as not talking, not playing with others, or having maladaptive thoughts are less commonly reported as referral concerns than externalizing behaviors. These 'behaviors' are difficult to identify due to their nature of being non-behaviors, or non-observable. Externalizing problem behaviors exhibited by Head Start children most often include aggression (hitting, kicking, or scratching other children), eloping (running away from the classroom area), and disrupting classroom procedures (throwing objects, shouting, calling out; Snell et al., 2012). Often, the first step in dealing with problem behaviors includes assessing problem behaviors before any interventions are considered.

Functional Behavior Assessment

A common process for assessing and designing intervention for problem behaviors includes conducting a functional behavioral assessment (FBA; Van Acker, Boreson, Gable, & Potterton, 2005). The term FBA refers to the range of assessment procedures that identify contextual variables (e.g., antecedents, consequences) that surround problem behaviors. Results from an FBA may be used to develop an intervention that alters contextual variables in order to promote appropriate behaviors while decreasing problem behaviors (Ingram, Lewis-Palmer, & Sugai, 2005). An FBA

may include indirect, direct, or experimental methods to identify or clarify the contextual variables that surround problem behavior.

Indirect methods of FBAs are removed from the time and place of occurrence of problem behavior. Rating scales, record reviews, and teacher interviews all constitute indirect FBA methodology. While these methods may be more time efficient and convenient to complete, they may not include quantifiable data, are correlational only, and may be susceptible to bias (Gresham, 2003).

Direct methods of FBAs can be separated into two categories: descriptive or experimental. Descriptive methods measure the behavior during the time of behaviors occurring in natural settings whereas experimental functional analyses manipulate contextual variables to identify a functional relationship between behavior and environment.

Descriptive methods often include classroom observation so as to capture the problem behavior and surrounding contextual variables. Antecedent – Behavior – Consequence (ABC) observations are narrative observations where the observer records the occurrence of the problem behavior, then behaviors of the student, teacher, or peers that preceded the problem behavior and behaviors of the student, teacher, or peers that followed the problem behavior (Hintze, Volpe, & Shapiro, 2002). Direct descriptive methods also include Systematic Direct Observation (SDO) with conditional probability. These observations use interval recording to measure problem behaviors and common or suspected antecedents to problem behavior and reinforcers. Common antecedents may include the presentation of task demands, removal or deprivation of preferred items or attention. Common reinforcers include teacher attention, peer attention, and/or escape.

SDO with conditional probability data require that the observer not only record the occurrence of the problem behavior and consequences, but calculate the percentage of intervals with problem behavior that are preceded by each antecedent and the percentage of intervals with problem behavior that are followed by each consequence (Cooper et al., 2007).

Experimental Functional Analyses (FAs), which were first described by Iwata et al. (1982), are the most scientifically sound form of behavior assessment under the umbrella of FBA. FAs are the experimental manipulation of antecedent events and consequences of problem behavior, comparing rates of problem behaviors across different conditions. In the original study by Iwata and et al. (1982), eight participants between the ages of 3 years, 7 months and 17 years, 2 months, with developmental disabilities (e.g. mild to profound Mental Retardation; now most corresponding to Intellectual Disability), and one participant aged 1 year 7 months with developmental delay participated in the study; all participants engaged in self-injurious behaviors (SIB). FAs included four conditions, testing two common forms of socially mediated reinforcement (social disapproval and academic demand), one condition testing automatic reinforcement (alone), and a control condition (unstructured play; Iwata et al., 1982). The social disapproval condition tested whether positive reinforcement in the form of verbal attention in response to the SIB was maintaining the problem behavior. The condition academic demand condition tested whether negative reinforcement in the form of a break from the academic work in response to the SIB was maintaining the problem behavior. The alone condition aimed to determine if the SIB produced its own reinforcement (automatic reinforcement). The control condition (i.e., unstructured play) aimed to

observe whether the SIB occurred in the presence of non-contingent attention while also in the absence of academic tasks demands (Iwata et al., 1982). Results from Iwata et al. indicated that there was within and between participant variability in SIB for the experimental conditions. In other words, individual participants demonstrated variability in responding to the different experimental conditions. As a result, Iwata et al. demonstrated that participants rate of SIB was sensitive to environmental manipulations and that analyses may be conducted that identify the reinforcer for an individual's SIB.

Many subsequent studies of a similar focus have sought to extend the boundaries of Iwata et al.'s methodology. The bulk of the research surrounding FAs has continued to include persons with various developmental disabilities, in clinical settings such as hospitals or specialized clinics. Due to the facilities that most often conduct these studies, the majority of research consists of behavioral professionals/staff conducting the conditions outlined by Iwata (Hanley, 2012).

FAs have been shown to be useful in clinic and hospital settings, but there are several obstacles to conducting FAs, especially outside of clinic settings, one of which is the time required to complete an FA (Hanley, 2012). Lyndon et al. (2012) also identified the time required to complete a standard FA as a limitation to the expansion of its use in practice, recognizing that a standard FA requires approximately 'six and a half hours' (pg.302). This amount of time may seem feasible in a behavioral psychology clinic that specializes in such methods; however, 6.5 hours may be excessive for other community-based clinics, schools, or individual's homes. Given the concerns regarding time to complete an FA, Northrup et al. (1991) conducted brief functional analyses (BFA) of problem behavior in an outpatient treatment center. Participants consisted of three

persons with moderate to profound intellectual disabilities, each referred for aggressive behavior and/or SIB. The BFA included a multi-element design with alone, escape, social attention, and tangible conditions in which each condition was presented during a single session. Conditions were conducted similarly to those of Iwata et al. (1982), wherein the reinforcer was available contingent on problem behavior. Each session lasted 5-10 minutes, with 1-2 minutes between sessions, significantly reducing the time required to complete the analogue assessment. Following the analogue experimental conditions, Northup et al. added a contingency reversal phase in which the experimenters conducted three sessions similar to the condition with the highest rate of problem behavior, except that the reinforcer was presented contingent on an appropriate mand (request) rather than problem behavior. For all three participants, results of the BFA identified a function for problem behavior, as well as using that identified reinforcer to reinforce an alternative behavior. Results from Northup et al. indicated that participants variability in responding across the experimental conditions could be observed in fewer, shorter sessions when compared to Iwata et al.'s FA procedures, meaning that the function may be just as well identified in less time. Additionally, Northup et al. found that BFA results demonstrate treatment utility of the assessment.

The BFA has high convergent validity with its extended counterpart, but is considerably more time efficient (Hanley, 2012). Kahng and Iwata (1999) conducted an examination 50 adult participants' results from brief analyses to extended (traditional) FAs. Brief analyses either consisted of a BFA following Northup et al's (1991) design or a within-session analysis comparing behavior change throughout the course of a single session. Results from this study indicate that when the FA identified a clear function,

BFA data better corresponded to those results than within session data. Similarly, when FA data not identify a clear function, within-session data better corresponded to those results than BFA data. So for behaviors with clear functions, BFA results have high correspondence with extended analysis results, With such high correspondence for analyzing behaviors with clear functions, BFAs achieve differential responding in fewer sessions (23- 40 sessions per FA compared to 6-7 sessions per BFA) and shorter sessions (15 minutes for FA compared to 5-10 minutes or BFA), saving experimenters/practitioners a substantial amount of time assessing behavior.

Additionally, Tincani, Castrogiavanni, and Axelrod (1999) found that for three adult participants diagnosed with autism who exhibited problem behaviors, the BFA procedures were completed in 20% of the time required for the extended FA to be completed, while informing treatment equally as well as extended analyses. The brief analysis consisted of an analog assessment including one ten-minute session of each of Northup's (1991) conditions hypothesized to maintain the problem behavior, functional communication training (FCT), and finally a contingency reversal. Upon the completion of the BFA procedures, novel therapists conducted extended functional analyses using the same conditions found in the BFA. For all three participants, BFA procedures identified the function of the problem behaviors, as shown by the successful contingency reversal in which problem behavior reached near zero levels, and appropriate mands for the reinforcer increased. Additionally, for all three participants, subsequent extended FA procedures identified the same functions of the problem behaviors as the BFA. The advantages of the BFA lend themselves to conducting experimental analyses of problem behaviors in the classroom. One such experiment to make use of these advantages was

conducted in a preschool setting with two typically developing children. Children were referred for tantrum behavior during transitions. In this case, the BFA results were used to formulate function-based interventions that were later compared.

FBA and BFA data have also been shown to produce convergent results in school settings. Dufrene et al. (2007) compared functions identified by indirect, direct descriptive, and BFA data. For each participant, the three methods identified the same function for the problem behavior. Dufrene et al. (2007) used FBA and BFA data to develop function-based interventions for decreasing aggressive and non-compliant behaviors for three preschool students.

In addition to efficiency of the assessment process being important, another critical aspect of an assessment procedure is the extent to which the assessment leads to beneficial treatment outcomes, which is referred to as the treatment utility of assessment (Hayes, Nelson, & Jarrett, 1987). Gresham et al. conducted a meta-analysis of school based intervention studies published between 1991 and 1999 from the Journal of Applied Behavior Analysis, examining the prevalence of FBAs in the literature, types of interventions used, response classes targeted by the FBAs, and the magnitude of behavior change observed. They found that 48% of studies implemented FBA procedures, with interventions most often employing both antecedent and consequent strategies combined, and most often focusing on academic or disruptive behavior. As for effect sizes, Gresham et al. included two measures of effect size: Standardized difference effect size (Faith, Allison, & Gorman 1997) and Percentage of Non-overlapping Data (PND; Scruggs & Mastropieri, 1998). Standardized Difference refers to the difference in means from intervention and baseline phases, divided by the standard deviation of the baseline phase

whereas the PND refers to the likelihood that any one datum from an intervention phase is to overlap with any one datum from a baseline phase. The two measures yielded conflicting results. According to the standardized difference measure, the studies with no FBA data had the greatest effect sizes (M=6.77, SD= 18.69), followed by those with experimental FBA data (M=4.60, SD= 7.62), then combined FBA data (M=2.18, SD= 1.37), and finally descriptive FBA data alone (M=0.70, SD= 5.07). In contrast, according to the PND measure, the studies with combined FBA data had the greatest effect sizes (M=67.11, SD= 33.94), followed by those with no FBA data (M=66.15, SD= 26.00), then descriptive FBA data (M=57.89, SD= 37.74), and finally experimental FBA data (M=51.41, SD= 34.16).

Since Gresham et al.'s meta-analysis, Miller and Lee (2013) analyzed 82 articles including participants diagnosed with ADHD, from 19 journals, published between the years 1980 – 2011. The analysis aimed to evaluate the differences in intervention effects between function-based interventions and non-function-based interventions as well as comparing differences between interventions based on descriptive FBA data and FA data. These authors performed standard mean difference (SMD) metric described by Busk and Serlin (1992), percent exceeding the median baseline phase (PEM) described by Ma (2006), and the improvement rate difference (IRD) described by Parker et al. (2009) for each participant. Mann-Whitney *U* analyses were conducted to compare the three effect size measures. Miller and Lee found that interventions including FBA data resulted in larger effects. Furthermore, Miller and Lee found that interventions including FA data resulted in larger effects than those including descriptive FBA data. Additionally, social validity ratings for interventions were rated positively more often for interventions

including FBA data as opposed to those that did not include FBA data (53% rated positively as opposed to 36%). Effect sizes did not differ between function-based interventions whether they were antecedent interventions, consequent interventions, or a combination of the two.

The current study included a teacher-implemented BFA and teacher delivered interventions, mediated by the primary researcher prompting in-vivo. Watson, Ray, Turner, & Logan, (1999) found that teachers could implement FA procedures and intervention procedures with high fidelity and reduce children's problem behavior. Teacher-implemented FA procedures lend to greater external validity in that students have a richer reinforcement history with their teachers as compared to an outside researcher. While researchers (Wallace, Doney, Mintz-Resudek, & Tarbox, 2004; Moore et al., 2002) have found effective means of training teachers, the current study implemented teacher prompting procedures in-vivo so as to reduce total time required to assess problem behavior.

Antecedent Intervention

Antecedent interventions involve the manipulation the environment prior to target behaviors' occurrence, and are designed to prevent the occurrence of problem behaviors by one of several ways: by altering response effort, manipulating discriminative stimuli, or manipulating Motivating Operations (MO; Laraway, Snycerski, Michael, & Poling, 2003)). Response effort refers to the amount of work required to produce some result. Lower response effort means that less work is required of the individual to produce the same result as was present in baseline conditions. As an antecedent manipulation, lowering response effort could include providing fewer tasks in between breaks,

providing easier work, or providing more assistance during work – in all cases, the amount of effort required of the child is lesser than that required in baseline conditions (Cooper, 2007).

Discriminative stimuli are stimuli that are present when a behavior is reinforced, and absent when the same behavior is not reinforced. Discriminative stimuli are essentially signals as to when a behavior will be reinforced. Manipulation of discriminative stimuli may include making the stimuli signaling the availability of reinforcement for appropriate behavior more salient, while removing or minimizing the salience of stimuli that had signaled the availability of reinforcement for problem behaviors. Manipulating discriminative stimuli involves manipulating signals to the child as to which reinforcer is available in various conditions (Cooper, 2007).

Motivating operations are antecedent events that alter the reinforcing value of some stimulus that result in either evocative (increase likelihood) or abative (decrease likelihood) effects on responding. Manipulating MOs works in one of two ways: increasing or decreasing the value of reinforcers. Increasing the value of reinforcers is known as an Establishing Operation (EO). Similarly, decreasing the value of reinforcers is known as an Abolishing Operation (AO; Cooper, 2007). There are a variety of procedures that result in manipulation MOs.

Non-contingent reinforcement (NCR) includes presenting reinforcers for problem behaviors on a schedule dependent on time, independent of the occurrence or non-occurrence behavior. NCR has been found to be an effective function-based treatment for reducing problem behavior (Richman, Barnard-Brak, Grubb, Bosch, & Abby, 2015).

NCR is conceptualized as an MO manipulation because providing access to a reinforcer in a non-contingent fashion may create an AO.

Much of the literature supporting NCR as an intervention has examined the schedules of NCR as an in session treatment, as demonstrated and described by multiple systematic reviews of NCR (Carr et al., 2000; Carr et al., 2009; Richman et al., 2015). Carr et al's. (2000) systematic review found that researchers have found success using NCR treatments to reduce a variety of behaviors, with a variety of functions (although the majority of functions listed were attention), and a variety of reinforcement schedules. Furthermore, Richman et al. (2015) went on to examine and compare research in order to measure the effect size of NCR intervention effects and compare those effects to non-function-based non-contingent interventions. Richman et al. used hierarchical linear modeling (HLM) to produce an estimate of Cohen's *d* to calculate effect sizes, In both cases, statistically significant results were obtained. NCR demonstrated success in reducing problem behaviors accounting for 60% of the variance in problem behavior between baseline and treatment (d= -1.58), and further investigation demonstrated that function-based NCR may be slightly more successful than non-function based NCR, accounting for an additional 10% of variance (d= -0.07; Richman et al., 2015).

Much of the research of NCR and the reduction of problem behaviors focuses on individuals with disabilities, as exemplified by the review by Carr, Stevertson, and Lepper (2009) including 59 studies evaluating the effectiveness of NCR. In contrast, few studies include NCR procedures for typically developing individuals, or within a general education setting. One study that did include a special education participant in a general education classroom was conducted by Banda and Sokolowsky (2012). The study

included one seven-year old boy diagnosed with ADHD, exhibiting problem behavior in the form of talking out of turn. After conducting an FA, researchers identified attention to maintain the child's behavior. Non-contingent attention was delivered every 20 seconds. Interestingly, the teacher completed a social validity rating scale, indicating that she "strongly agreed" with nearly all assessment and intervention procedures.

Much of the NCR literature includes a fixed time schedule of stimulus delivery wherein reinforcers are presented after a predetermined amount of time, regardless of behaviors occurring (Halphen von Schulz, 2014). However the current study aims to implement pre-session NCR as the antecedent intervention. For example, O'Reilly (1999) conducted pre-session conditions including pre-session attention for an adult participant whose behaviors were identified as attention maintained. Results indicated that pre-session attention reduced the rate of problem behavior in session. The study presented with several limitations including inadequate design and participants. Pre-session NCR may be preferable to fixed-time NCR, especially in traditional school settings, because pre-session NCR would require a teacher to provide continuous attention to a child prior to an instructional period; whereas fixed-time NCR would include regularly delivery of the reinforcer during instruction, which may interfere with instruction.

Methods used by Rispoli et al. (2013) described the use and measurement of pre-session satiation in terms of reinforcer rejection, which included the participant avoiding the 'reinforcer'. Mean latencies to 'satiation' were reported as: 5.67 minutes, 6.5 minutes, and 10.83 minutes. The current study will use this median latency of 6.5 minutes (Rispoli, 2013) as the pre-session duration of NCR. While precession satiation is designed to act as an abolishing operation, only the extinction component is observable

once sessions begin, whereas reinforcement based interventions include components evident throughout the session.

Reinforcement Based intervention

Reinforcement interventions involve manipulation of the environment contingent upon target behavior occurrence. Reinforcement procedures work by presenting or removing stimuli that are identified as either appetitive or aversive. The presentation of appetitive stimuli or removal of aversive stimuli comprise 'reinforcing' consequences, increasing the likelihood of the behavior occurring. Extinction indicates that reinforcement is withheld following a target behavior, reducing its likelihood of occurrence.

Several reinforcement interventions involve differential reinforcement, meaning that some behaviors are reinforced and some are extinguished. Vollmer and Iwata (1992) describe several variations in the implementation of differential reinforcement as a treatment for problem behaviors. Two types of differential reinforcement are differential reinforcement of other behavior (DRO) and differential reinforcement of alternative behavior (DRA). DRO combines two consequent components: extinction following problem behavior, and reinforcement for the absence of problem behaviors. DRO may include whole session or momentary DRO both including either fixed or variable intervals. Whole session DRO interventions utilize intervals, upon the completion of which reinforcers are presented, so long as problem behavior did not occur within that interval. In the case that problem behavior does occur, the interval is reset in typical DRO studies. In momentary DRO, the interventionist looks up at the person at a predetermined point in the interval and if the behavior is not occurring at that particular moment, then

the reinforcer is delivered; if the behavior is occurring, then the interval is reset. Hammond (2011) demonstrated that fixed momentary DRO when intervals are not signaled create ideal conditions for reducing problem behaviors.

DRA also combines two consequent components: extinction following problem behavior, and reinforcement for alternative, more desirable behaviors. DRA differs from DRO in that it is not necessarily interval dependent, DRA can work similar to other reinforcement strategies as far as schedule. However, for DRA to be at work, some behaviors are extinguished while some are reinforced – the behaviors that are reinforced are functionally equivalent to the problem behaviors extinguished. In a sense, DRA teaches replacement behaviors so that the original behaviors are no longer necessary to produce reinforcement.

LeGray et al. (2010) compared the relative effects of DRA and DRO for decreasing problem behavior and increasing academically engaged behavior for preschool children in Head Start. FBA results were used to develop individualized DRA and DRO interventions. The results of the study suggest that both DRA and DRO were effective at reducing problem behavior, with DRA showing greater improvements in child behavior. The current study will include DRA as a function-based intervention. Halphen von Schulz (2012) extended this research and found that DRA and DRO are not only effective at reducing problem behaviors, but also effective at increasing academically engaged behavior.

DRA has not only been successful in decreasing problem behaviors, but teaching replacement behaviors (Petscher et al., 2009). DRA has been found effective with a variety of populations, with a variety of problem behaviors, however the majority of the

research has included on individuals with disabilities (Vollmer, Roane, Ringdahl, & Marcus, 1999). The current study aims to examine the effects of DRA on increasing Head Start children' academically engaged behavior.

Relative Effects of NCR and DRA

Thus far, few research studies have compared the relative effects of NCR and DRA interventions, fewer have compared their effects within the preschool population. Kodak, Miltenberger, and Romaniuk (2003) evaluated the relative effects of NCR and DRO in the context of negative reinforcement for children with disabilities exhibiting problem behaviors, in their home settings. Results indicated that both interventions were equally effective. Unfortunately, no alternative behavior was measured or targeted nor were social validity data collected for the interventions. Mueller, Edwards, and Trahant (2003) compared NCR, DRA, and differential negative reinforcement of alternative behavior (DNRA) interventions in a classroom setting for elementary students with disabilities exhibiting problem behaviors, but again lacked measurement of alternative behavior. In this study, children were exposed to all treatment conditions, all of which teachers rated for acceptability. Results indicated that NCR and DRA worked equally well, and both of which work at least as well as DNRA. For the teachers in this study, only DRA was rated as an acceptable intervention, although one teacher chose to continue with an NCR intervention despite her lower acceptability rating for the intervention in recognition of the greater effects observed during the NCR treatment condition. Halphen-von Schulz (2014) evaluated NCR and DRA interventions for four children in Head Start classrooms exhibiting problem behaviors. Halphen-von Schulz conducted a BFA to identify the function for each child's problem behaviors, then

matched the function to interventions that both implemented reinforcement delivery based on 60 second intervals. Results indicated that DRA and NCR are effective at decreasing problem behavior and increasing appropriate classroom behavior. Additionally, three out of four of the teachers involved in the study rated the assessment and intervention procedure acceptable.

Purpose

The purpose of the current study is to test the relative efficacy of antecedent and consequent function-based interventions. The literature evaluating relative effects of NCR and DRA is limited, especially with regard to studies including children of typical development in traditional school settings. As a result, this study will extend the literature by providing an additional demonstration of the relative effects of NCR and DRA for improving behavioral performance of children referred for behavior intervention services due to disruptive behavior in the classroom. Whereas Halphen-von Schulz (2014 compared NCR based on a fixed time schedule and DRA procedures, the current study will compare NCR as pre-session satiation and DRA procedures. In addition to comparing the relative effects of NCR and DRA for improving children's behavioral performance, this study will also include evaluation of the social validity of the intervention procedures based on teachers' ratings of the social validity of the assessment and intervention procedures. The following research questions will be addressed:

Research Questions

1. Are there relative differences in the efficacy of function-based NCR and DRA for decreasing problem behavior?
2. Are there relative differences in the efficacy of a function-based NCR and DRA

for increasing appropriate behavior?

3. Do teachers rate assessment procedures as socially valid?

   Do teachers' ratings of the social validity of interventions differ for NCR versus DRA

CHAPTER II - METHODS

Participants

Participants included three children from three children from Head Start classrooms. All participants exhibited frequent problem behaviors, as reported by the teacher and further supported by direct observation in which problem behaviors during a screening observation. Exclusionary criteria included (a) children referred for engaging in severe aggression or self-injurious behaviors, (b) children receiving behavioral intervention at the time of recruitment, and (c) children diagnosed with a moderate or severe Intellectual Disability. Approval from The University of Southern Mississippi Institutional Review Board (IRB) was received prior to the start of the study (See Appendix A). Baxter was an African-American 4-year-old male with an African-American female teacher with 5 years of Head Start teaching experience. Lilly was a biracial 4-year-old female with an African-American female teacher with more than 10 years of Head Start teaching experience. Izzy was an African-American 4-year-old female with a Hispanic female assistant teacher with 1 year of Head Start experience. Although none of the participants received special education services during the course of the study, Lilly was referred for special education evaluation regarding concerns for possible speech delays.

Materials

Functional assessment informant record for teachers-preschool version (FAIR-T-P II)

The FAIR-T P II (Dufrene et al., 2007 Appendix B) is an indirect measure of problem behavior that uses teacher responses to items regarding the occurrence,

antecedents, and consequences of problem behaviors exhibited by preschool children in order to hypothesize the functions of problem behaviors observed in the preschool classroom setting. The original FAIR-T P included a semi-structured interview format and had been found to produce results that matched those from descriptive and experimental functional analyses (Dufrene et al., 2007; LeGray et al., 2010). The Fair-T P II includes a rating scale format and initial studies have indicated that results from the FAIR-T P II match results of experimental functional analyses. Moreover, initial studies have demonstrated that the FAIR-T P II is useful for intervention planning (Dufrene et al., 2007; LeGray et al., 2010; Poole et al., 2012).

The FAIR-T P II is organized into four sections: Teacher and Child Demographics, Problem Behaviors, Antecedents, and Consequences. The first section collects basic information about the teacher, child, and how the teacher has dealt with the child's challenging behaviors in the past. This section also informs the time of day or activity when the problem behavior occurs most often. In the Problem Behavior section, teachers identify and rank the three most severe problem behaviors. Other information about those three behaviors is collected such as frequency of occurrence, manageability of problem behavior, disruptiveness of the behavior to the class. The Antecedent section includes 27 items representing various possible antecedent conditions that the teacher rates according to how often they precede the targeted behaviors. Antecedent conditions are rated on a scale ranging from 0- 3. A rating of two or greater indicates that the antecedent condition likely serves as a motivating operation for the problem behavior, or as a discriminative stimulus that the problem behavior will be reinforced. Similarly, the Consequent section includes 20 items representing various possible consequences that the

teacher rates according to how often they follow the targeted behaviors. Consequences are rated on a scale ranging from 0- 3. A rating of two or greater indicates that the consequence is may be a reinforcer for the target behavior. The FAIR-T P II was used to operationally define problem behaviors and will also inform the functional analysis conditions. Consequences that receive ratings of two or greater was manipulated in the BFA.

Usage Rating Profile (URP-A)

The URP-A ((Chafouleas, Miller, Briesch, Neugebauer, & Riley-Tillman, 2012; Appendix C) is a six factor-loading instrument of that measures teachers' acceptability, understanding, family-school collaboration, feasibility, system climate, and system support for an assessment procedure. The URP-A uses a 6-point Likert scale to rate agreement of assessment procedures with a score of 1 indicating that the teachers strongly disagree with assessment procedures and a score of 6 indicating that teachers strongly agree with assessment procedures across 28 items. Currently, no psychometric data have been reported for this instrument

Usage Rating Profile-Intervention; Revised (URP-IR)

Teachers completed the URP-IR (Chafouleas, Briesch, Neugebauer, & Riley-Tillman, 2011; Appendix D) for each the NCR intervention procedures and the DRA intervention procedures. The URP-IR is a six factor-loading instrument of that measures teachers' acceptability, understanding, home-school collaboration, feasibility, system climate, and system support for an assessment procedure. The URP-IR uses a 6-point likert scale to rate agreement of intervention procedures with a score of 1 indicating that the teachers strongly disagree with intervention procedures and a score of 6 indicating

that teachers strongly agree with intervention procedures across 29 items. When assessing the reliability of the URP-IR, the URP-IR yielded a coefficient alpha of .83.5 across all factors, ranging from .72 to .95 (Briesch, Chafouleas, Neugebauer, & Riley-Tillman, 2013).

Data Collection Procedures

Two child behaviors served as dependent measures: problem behavior and appropriately engaged behavior (AEB). Problem behaviors were identified and defined via the results of the FAIR-T P II and consultation with the teacher of each child. Appropriately engaged behaviors are behaviors that are relevant to the child's assigned task, defined as remaining within the assigned area (sitting or standing within two feet) and manipulating assigned academic materials appropriately or facing the teacher during instruction.

The child's behaviors were recorded during 10 min observations using 10-second momentary time sampling. Momentary time sampling includes scoring a behavior as having occurred if it occurs at the exact moment that the observer looks up at the child Momentary time sampling is recognized as the most accurate time sampling method (Radley, O'Handley, & LaBrot, 2015) and is appropriate for these behaviors due to the frequent, long lasting nature of either behavior. Johnson (2014) identified that momentary time sampling did produce the most representative and reliable recordings, when compared to partial interval or whole interval time sampling. Observations lasting 10 minutes were conducted during the time or activity reported as when the child engages in the most problem behavior due to the relative representativeness of ten minute

observations as compared to other observations under one hour for both FA conditions and in classroom observations (Wallace, & Iwata, 1999; Tiger et al., 2013).

Observers stood or sat in an unobtrusive part of the classroom, listening to a data collection application announcing 10-second intervals that prompted a brief observation and immediate recording of the target child's behavior at the time of observation. Observers included graduate and undergraduate students that had been previously trained to a 90% agreement criterion for a variety of target behaviors. Additionally, all observers were trained in the operational definitions to be used in this study, trained on the observation method, and met 90% or greater inter-observer agreement during a previous observation of the target child.

Design and Data Analysis

Brief functional analyses included a brief multi-element design modeled after procedures used by Northup et al. (1991). The brief functional analyses were hypothesis based (including only hypothesized functions based on the FAIR-T P II). That is, a BFA included one session per condition and the BFA was followed by a contingency reversal phase (B-A-B) in which the contingency that produces the highest level of behavior during the BFA were reversed during the B sessions and replicated during the A session (LeGray et al., 2010). In order for a contingency to be included in contingency reversal, that contingency must have resulted in a level of behavior that is 20% greater than any other condition in the BFA.

In the case that the BFA does not produce clear results (i.e. one clear function), an extended FA would be conducted using either the same conditions or some combination of conditions (e.g., escape to attention). Subsequent to identifying a behavior's function,

an alternating treatments design (ATD; Cooper et al., 2007) with an independent verification phase (also similar to the design described by LeGray et al. [2010]) was conducted to compare the effectiveness of the two function-based interventions. The ATD included a control condition, pre-session satiation condition (NCR), and a differential reinforcement of alternative behavior (DRA) condition. The independent verification phase consisted only of the condition that was judged most effective in increasing appropriate behavior during the ATD phase, through visual analysis. The independent verification phase was included to demonstrate continued treatment effects while the intervention is not rapidly alternated with another intervention, thus minimizing multiple treatment interference as a threat to internal validity. Visual analysis of level, trend, variability, rapidity of change, and divergence of data (Horner et al., 2005) was used to identify data patterns that may suggest differentiation (for both the functional assessment and treatment comparison components) from the other conditions.

Procedures

FAIR-T-P II

Upon teacher referral of a child, the teacher of each child received the FAIR-T P II and were instructed to complete the form independently. The researcher later met with the teacher to discuss the results of the FAIR-T P II, operationally define the sessions) based on the time of day or activity during which problem behaviors reportedly occur most often.

Screening Observation

The screening observation took place during the time or activity when the teacher reported the problem behaviors occurring most often. The observation lasted 10 minutes,

during which the observer recorded the occurrences of child's appropriate and problem behaviors using a momentary time sampling procedure. Observers located themselves in an unobtrusive location in the classroom. Teachers were instructed to teach their classroom as they usually would, using their typical classroom management techniques. Additionally, observers did not provide any feedback to the children or the teachers following the observation.

BFA

Teacher Consultation Following a qualifying screening observation (with problem behaviors occurring in 20% or more intervals and appropriate behavior occurring in 70% or less intervals) a brief multi-element design including one session per condition hypothesized to maintain problem behavior will be conducted. The BFA was a hypothesis-based such that only conditions identified during the FAIR-T P II were experimentally tested. Specifically, a condition was only tested if the teacher rated an item for that reinforcer as 2 or 3 (i.e., happens some, happens very often). The order of the conditions was randomized using a data collection app. BFA conditions were conducted similarly to those described by LeGray et al. (2010). Additionally, before any session was conducted, the researcher reviewed the procedures prescribed for that condition and provide the teacher opportunity to ask questions or clarify any instruction. Instructional activities were identical across tangible, attention, and escape conditions.

Tangible Condition **.** Before any tangible condition sessions, teacher interviews were conducted to identify five preferred items; using those five items, the researcher conducted an MSWO preference assessment (See Appendix E) as described by DeLeon and Iwata et al. (1996). See Appendix F for Tangible Condition protocol. At the start of

tangible sessions, the teacher offered the child one of his or her preferred items (highest two preferred items from MSWO) and allowed him or her to play with that item for 2 minutes. The teacher left the child's area (out of arm's reach). After those two minutes, the teacher removed the item from the child and the session began. Contingent on problem behavior, the researcher raised a laminated sheet of construction paper, which read "Give toy," indicating that the teacher should give the same preferred item to the child for 30 seconds. The researcher tracked the time of the returned tangible and cued the teacher via the other side of the laminated sheet of construction paper, which read "Take item." Other problem behaviors that did not fit the operational definitions were ignored.

Attention Condition During the attention condition the teacher instructed the child to engage in the assigned activity as she would typically, then she left the child's area (out of arm's reach) so as to divert her attention. Contingent on problem behavior, the researcher raised a laminated sheet of construction paper, which read "Give attention," indicating that the teacher should provide a verbal reprimand to the child such as "Don't do that" or "Stop that." After the reprimand the teacher again diverted her attention. Other problem behaviors that did not fit the operational definitions were ignored See Appendix G for protocol.

Escape Condition For the escape condition, the teacher presented activity-related demands/prompts to the child. Contingent on problem behavior, the researcher raised a laminated sheet of construction paper, which read, "Break," indicating that the teacher should tell the child that he or she doesn't have to do the work. During the break, the teacher removed task-related materials, withhold attention, and block access to preferred

items. The break lasted for 30 seconds. The researcher tracked the duration of the break and cued the teacher via the other side of the laminated sheet of construction, which read, "Return to work." The escape or 'break' was contingent on targeted problem behaviors and not passive non-compliance, unless non-compliance was an identified problem behavior. In the occurrence of non-compliance without problem behavior, a least-to-most prompting hierarchy was implemented. The least-to-most prompting hierarchy will proceed as follows: verbal instruction, verbal instruction plus a model, then hand-over-hand guided compliance. Compliance following the verbal instruction or verbal instruction plus a model will result in verbal praise from the teacher (i.e. "Good job!"). Other problem behaviors that did not fit the operational definitions were ignored. See Appendix H for protocol.

Control Condition The control condition consisted of free access to preferred tangibles and attention scheduled to be presented every 30 seconds within the typical instruction area. No demands were placed on the child during the control condition. All problem behaviors were ignored unless they posed possible harm to other children. The observer blocked any behavior that posed a physical threat to other children, if behaviors that are dangerous to other children occurred during two or more observations; the participant would have been excluded from the current study and received alternative recommendations/interventions. See Appendix I for protocol.

Contingency Reversal

A contingency reversal was conducted to confirm the results of the BFA. Using a B-A-B design, the A phase replicated the condition identified by the BFA as maintaining the problem behavior. The B phases consisted of a session where DRA procedures are in

place, in which the lack of problem behavior resulted in the presentation of the reinforcer matched to that of the A phase (the reinforcer from the BFA condition that indicated a functional relationship). Intervals of thirty seconds without problem behavior resulted in the presentation of the reinforcer identified by the BFA; if problem behavior did occur, the thirty-second interval reset. See Appendix J for Contingency Reversal protocol.

Intervention Analysis

Teacher training. Following the contingency reversal antecedent and consequent interventions were tested via an ATD. This ATD compared two treatment conditions against each other as well as against a non-treatment control condition. The order of the conditions was randomized, but each condition was conducted once before a condition is repeated. Each treatment and the control condition are described below. Teachers were trained on the procedures required for them to conduct all sessions with visual prompts controlled by the researcher(s). Additionally, before any session was conducted, the researcher reviewed the procedures prescribed for that condition and provide the teacher opportunity to ask questions or clarify any instruction. Instructional activities were identical to those present in BFA conditions, across tangible, attention, and escape conditions.

Function based antecedent intervention. The function-based antecedent intervention consisted of pre-session non-contingent reinforcement (NCR) and in-session extinction. During this pre-session, teachers were instructed to provide the reinforcer identified by the BFA for 6.5 minutes. After the 6.5 minutes of pre-session NCR, session began and the teacher was instructed to continue with the class activity as per usual with

the only instruction to ignore all problem behaviors (withholding attention, preferred items, and presenting demands when necessary). See Appendix K for protocol.

Function based reinforcement intervention. The DRA condition operated on a fixed interval reinforcement schedule, yoked to the reinforcement schedule observed in the BFA condition that identified the function of the problem behavior. Therefore, after a period of the child engaging in appropriate behavior (specific to the activity) the researcher raised a laminated sheet of construction paper used in the BFA indicating that the teacher should provide the same reinforcer found to maintain the problem behavior contingent on the first demonstration of academically engaged behavior. Any instance of targeted problem behavior will result in the resetting of the 30-second interval, meaning that problem behavior will be placed on extinction, See Appendix L for protocol.

Control. The control condition will resemble the initial screening observation in that, the teacher will be instructed to conduct class as he or she typically would. Additionally, the researcher will not provide any feedback to the teacher or child following an observation. This condition will allow for the comparison of either treatment condition against a condition with no prescribed function-based intervention.

Independent Verification. A potential threat to internal validity within an ATD is concern about multiple treatment interference (Cooper, 2007), meaning concern about sequence and/or carryover effects. In order to confirm the treatment's utility when isolated from the rapid changing of conditions an independent verification phase will be conducted. This phase consisted of five consecutive sessions of only the treatment condition demonstrated in the ATD to be most effective.

Rating Scales

Lastly, upon completion of the verification phase each teacher was given and instructed to complete the URP-A and two (one for each treatment condition) URP-IR rating scales.

Inter-observer Agreement and Treatment Integrity

Inter-observer Agreement (IOA) was conducted for at least 30% of sessions for each condition for each participant. IOA was calculated per dependent measure, by dividing the number of interval agreements by the number of interval agreements plus the number of interval disagreements and multiplied by 100. Observers were trained to 90% IOA, furthermore IOA of each conditioned was monitored so that if an observation's IOA fell below 90%, the secondary observer would be retrained on operational definitions and data collection procedures. Problem Behavior IOA averaged 94.86% (range 85%-98.33%), 94.72% (range 80%- 100%), and 94.11% (range 81.67%- 100%) for Baxter, Lilly, and Izzy, respectively. Academically Engaged Behavior IOA averaged 95.97% (range 95%-98.33%), 93.88% (range 88.33%- 98.33%), and 96.22% (range 86.67%-100%) for Baxter, Lilly, and Izzy, respectively. Kappa was also calculated so as to account for agreements likely due to chance (Watkins & Pacheco, 2000) producing a more conservative estimate of IOA. Problem Behavior kappa scores were 0.659, 0.707, and 0.844 for Baxter, Lilly, and Izzy, respectively. Academically Engaged Behavior kappa scores were 0.934, 0.920, and 0.807 for Baxter, Lilly, and Izzy, respectively. Kappa values range from −1.00 to +1.00. Values below 0.00 indicate agreement likely due to chance, values of less than .40 indicate poor agreement, values of .40 to .60 indicate fair agreement, values of .60 to .75 indicate good agreement, and values greater than .75 indicate excellent agreement.

Treatment integrity data were collected via a checklist itemizing various components of each condition including implementing the appropriate establishing operation, providing/withholding correct reinforcers. FA conditions' components are outlined in Appendices M, N, O, and P. Treatment conditions' components are outlined in Appendices Q, R, and S. Using the listed components, steps completed correctly were divided by the total number of steps, then multiplied by 100 to obtain a percentage of steps completed correctly. If the teacher's procedural integrity would fall below 80% during any session, the researcher provided performance feedback following that session, and prior to the next session. Performance feedback included providing a rationale for implementing the intervention accurately, corrective feedback for any steps that were not implemented correctly, and praise for steps that were implemented correctly. Treatment integrity for all participants' teachers remained at 100%.

CHAPTER III - RESULTS

Functional Analysis

Baxter

Teacher consultation revealed Baxter's problem behaviors to include: non-compliance, out of area, and tantrum behaviors. Non-Compliance was defined as not initiating compliance for an individual or group command from the teacher within 5 seconds and not completing compliance for the command within five seconds. Out of Area was defined as being 2 or more feet away from assigned spot or buttocks off of assigned chair. Tantrums behaviors were defined as crying or screaming for three or more consecutive seconds.

Baxter's teacher rated positive reinforcement –both attention or tangibles – and negative reinforcement – in the form of escape from demands – as often following non-compliance, out of area, and tantrum behaviors.

During the screening observation Baxter emitted problem behavior during 25% of intervals, and AEB during 63.33% of intervals. During the BFA, Baxter emitted problem behavior during 21.67% of intervals observed during the attention condition, which was 15-16.67% greater than observed level during the other conditions. During the contingency reversal, Baxter emitted problem behavior during 8.33% and 16.67% of the observed intervals during the contingency reversal sessions. During the return to attention condition, Baxter emitted problem behavior during 36.67% of the observed intervals. Figures 1 and 2 display Baxter's levels of problem behavior and AEB, respectively.

Lilly

Teacher consultation revealed Lilly's problem behaviors to include: non-compliance, inappropriate vocalizations, and off-task behaviors. Non-Compliance was defined as not initiating an individual or group command from teacher within 5 seconds or not completing task commanded. Inappropriate Vocalizations was defined as talking out of turn or at volume above conversational tone. Off task behaviors were defined as looking away from assigned materials or away from teacher during instruction.

Lilly's teacher rated positive reinforcement –both attention or tangibles – and negative reinforcement – in the form of escape from demands – as often following off-task behaviors, whereas no functions were identified for non-compliance or inappropriate vocalizations. During the screening observation Lilly emitted problem behavior during 26.3% intervals and AEB during 63.33% of intervals. During the BFA, Lilly emitted problem behavior during 66.67% of intervals observed during the attention condition, which was 41.67-46.67% greater than observed level during the other conditions. During the contingency reversal, Lilly emitted problem behavior during 1.67% and 5% of the observed intervals during the contingency reversal sessions. During the return to attention condition, Lilly emitted problem behavior during 63.33% of the observed intervals. Figures 3 and 4 display Lilly's levels of problem behavior and AEB, respectively.

Izzy

Teacher consultation revealed Izzy's problem behaviors to include: non-compliance, out of area, and tantrum behaviors. Non-Compliance was defined as not initiating an individual or group command from teacher within 5 seconds or not

completing task commanded. Out of Area was defined as being 2 or more feet away from assigned spot or buttocks off of assigned chair. Tantrums behaviors were defined as crying or screaming. Izzy's teacher rated positive reinforcement –both attention or tangibles – and negative reinforcement – in the form of escape from demands – as often following non-compliance, out of area, and tantrum behaviors.

During the screening observation Izzy emitted problem behavior during 100% of intervals and AEB during 0% of intervals. During the BFA, Izzy emitted problem behavior during 80% of intervals observed during the attention condition, which was 40-63.33% greater than observed level during the other conditions. During the contingency reversal, Izzy emitted problem behavior during 31.67% and 41.67% of the observed intervals during the contingency reversal sessions. During the return to attention condition, Izzy emitted problem behavior during 81.67% of the observed intervals. Figures 5 and 6 display Izzy's levels of problem behavior and AEB, respectively.

Intervention Analysis

Baxter

Intervention analysis data revealed minimal overlap of problem behavior levels between control, NCR, and DRA conditions (Figure 1) and clear divergence of AEB levels between control, NCR, and DRA conditions (Figure 2). During the control condition Baxter emitted problem behavior a mean of 13.89% (range: 13.33-15%) of intervals and emitted academically engaged behavior a mean of 50% (range: 48.33-51.67%) of intervals. During the NCR condition Baxter emitted problem behavior a mean of 26.67% (range: 15-33.33%) of intervals and emitted academically engaged behavior a mean of 44.99% (range: 43.33-46.67%) of intervals. During the DRA condition Baxter

emitted problem behavior a mean of 8.67% (range: 6.67-16.67%) of intervals and emitted academically engaged behavior a mean of 68% (range: 60-73.33%) of intervals.

DRA sessions immediately and consistently demonstrated the highest levels of AEB, and lowest levels of problem behavior, divergent from the NCR sessions. A verification phase was conducted, including only DRA sessions. During these sessions, Baxter emitted problem behavior a mean of 8% (range: 5-10%) of intervals and emitted academically engaged behavior a mean of 77.33% (range: 71.67-83.33%) of intervals.

Lilly

Intervention analysis data revealed minimal overlap of problem behavior levels between control, NCR, and DRA conditions (Figure 3) and clear divergence of AEB levels between control, NCR, and DRA conditions (Figure 4). During the control condition Lilly emitted problem behavior a mean of 62.91% (range: 46.67-80%) of intervals and emitted academically engaged behavior a mean of 37.91% (range: 25-48.33%) of intervals. During the NCR condition Lilly emitted problem behavior a mean of 15% (range: 0-25%) of intervals and emitted academically engaged behavior a mean of 78.67% (range: 75-83.33%) of intervals. During the DRA condition Lilly emitted problem behavior a mean of 2.85% (range: 0-3.33%) of intervals and emitted academically engaged behavior a mean of 87.62% (range: 78.33-91.67%) of intervals.

DRA sessions demonstrated the overall highest levels of AEB, and overall lowest levels of problem behavior, despite initially similar levels of responding during some NCR sessions. A verification phase was conducted, including only DRA sessions. These sessions resulted in a mean of 3.33% (range: 1.67-6.67%) of intervals with problem

behavior occurring and a mean of 92.33% (range: 88.33-95%) of intervals with AEB occurring.

Izzy

Intervention analysis data revealed minimal overlap of problem behavior levels between control, NCR, and DRA conditions (Figure 5) and clear divergence of AEB levels between control, NCR, and DRA conditions (Figure 6). During the control condition Izzy emitted problem behavior a mean of 66.67% (range: 65-71.67%) of intervals and emitted academically engaged behavior a mean of 26.67% (range: 25-28.33%) of intervals. During the NCR condition Izzy emitted problem behavior a mean of 51.67% (range: 48.33-58.33%) of intervals and emitted academically engaged behavior a mean of 42.78% (range: 35-51.67%) of intervals. During the DRA condition Izzy emitted problem behavior a mean of 34.33% (range: 26.67-41.67%) of intervals and emitted academically engaged behavior a mean of 59.33% (range: 50-70%) of intervals.

DRA sessions immediately and consistently demonstrated the highest levels of AEB, and lowest levels of problem behavior, divergent from the NCR sessions. A verification phase was conducted, including only DRA sessions. These sessions resulted in a mean of 26% (range: 23.33-30%) of intervals with problem behavior occurring and a mean of 71.67% (range: 66.67-73.33%) of intervals with AEB occurring.

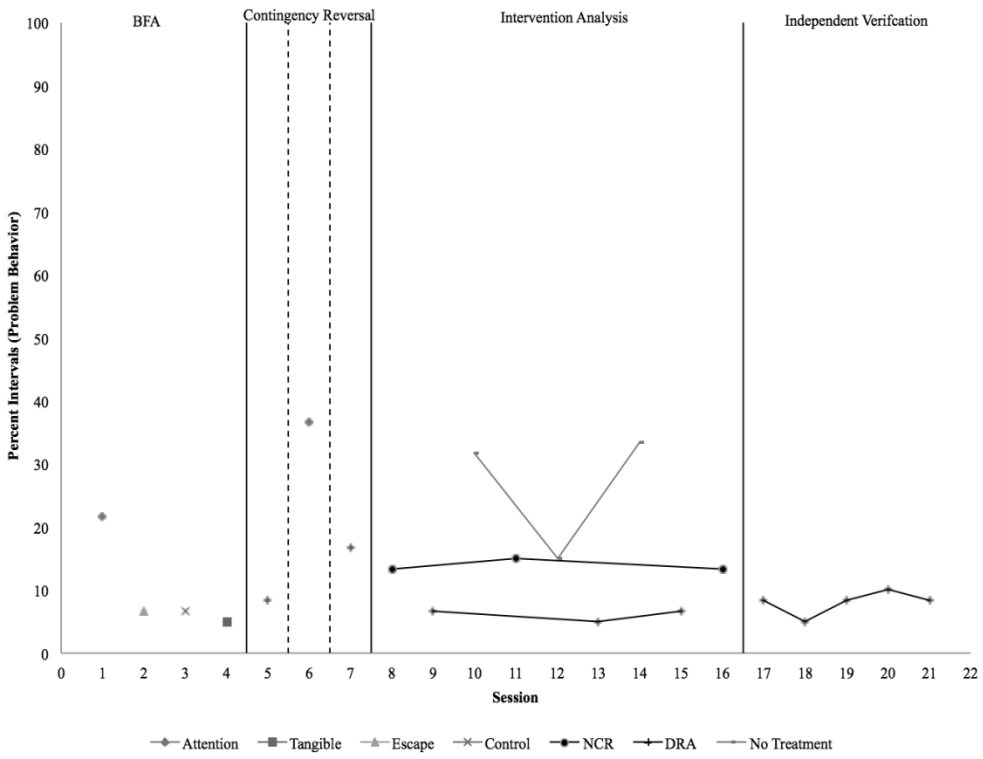

Figure 3.1 Baxter's PB.

The graph displays Baxter's percent of intervals in which he engaged in problem behaviors.

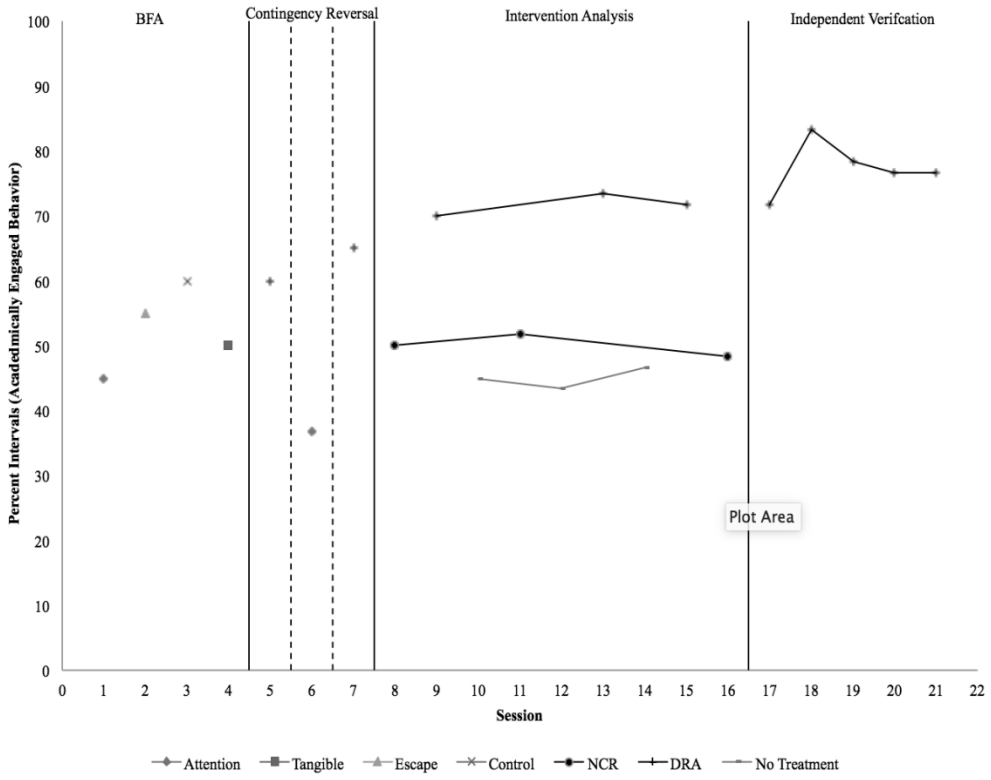

Figure 3.2 Baxter's AEB.

The graph displays Baxter's percent of intervals in which he engaged in academically engaged behaviors.

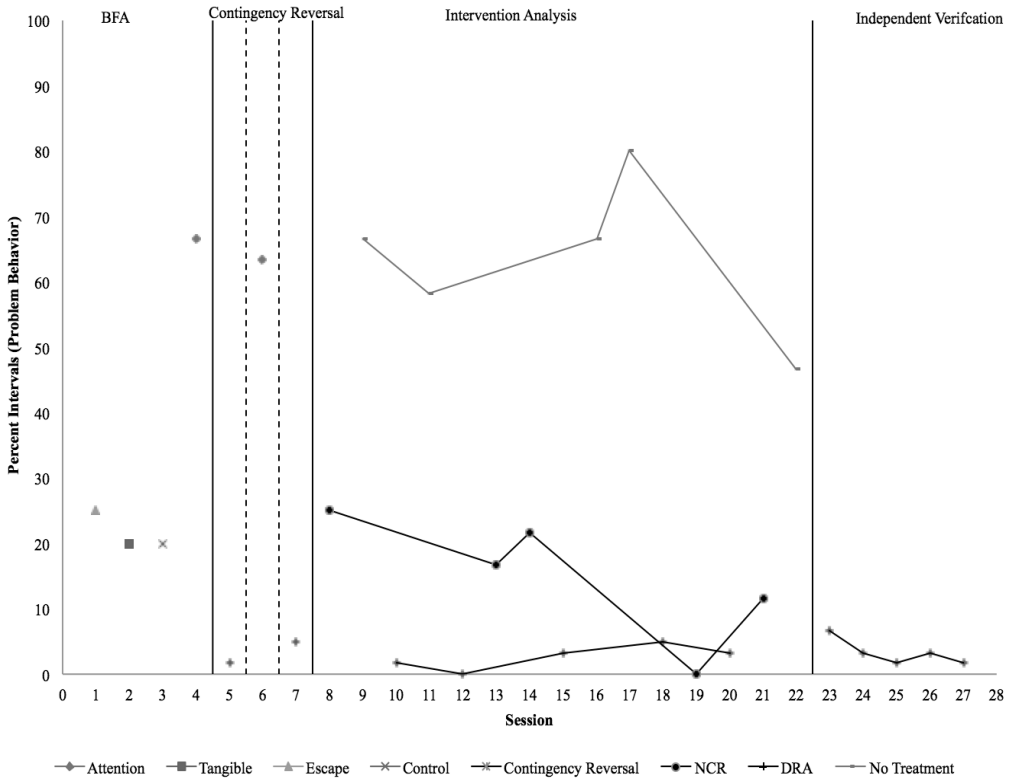

Figure 3.3 Lilly's PB.

The graph displays Lilly's percent of intervals in which she engaged in problem behaviors.

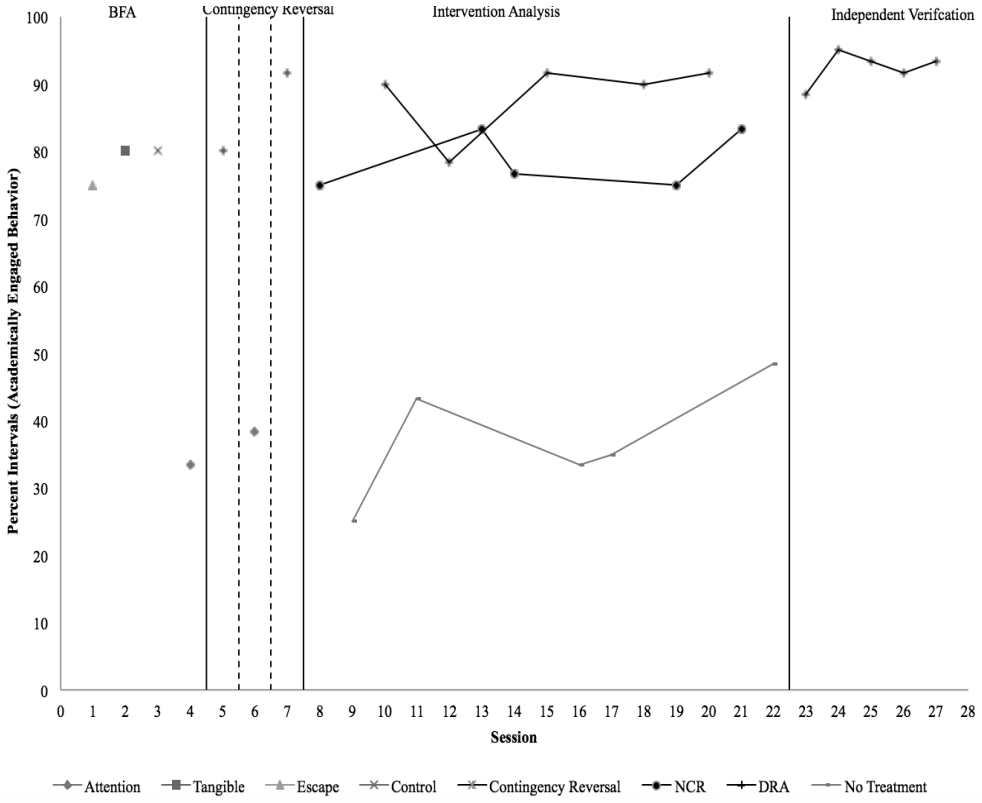

Figure 3.4 Lilly's AEB.

The graph displays Lilly's percent of intervals in which she engaged in academically engaged behaviors

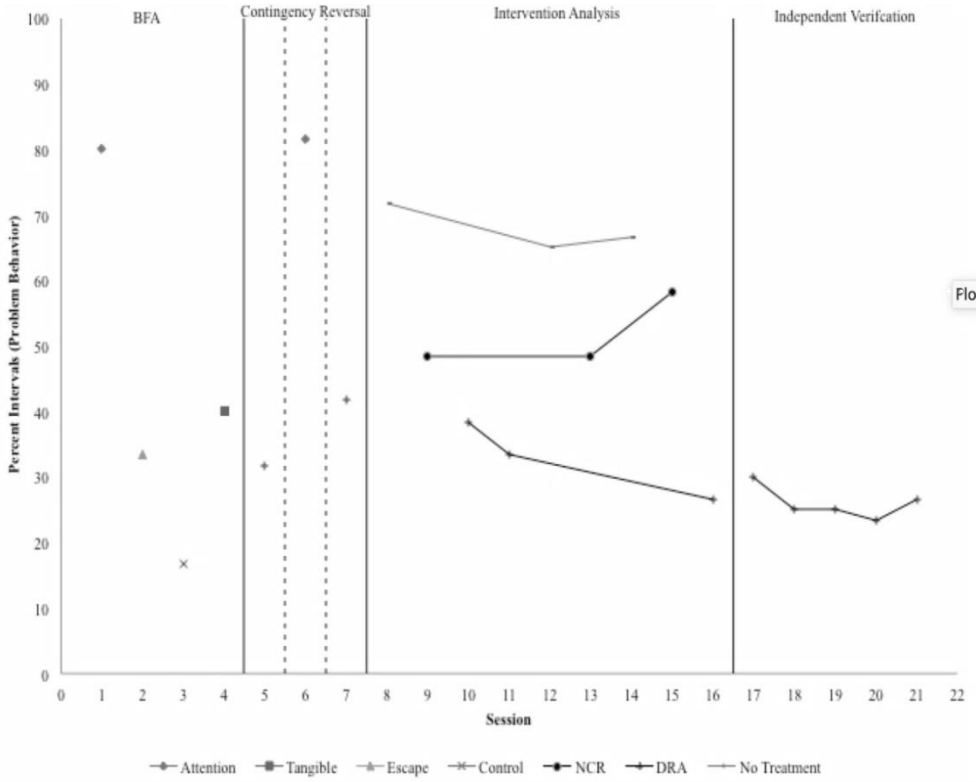

Figure 3.5 Izzy's PB.

The graph displays Izzy's percent of intervals in which she engaged in problem behaviors.

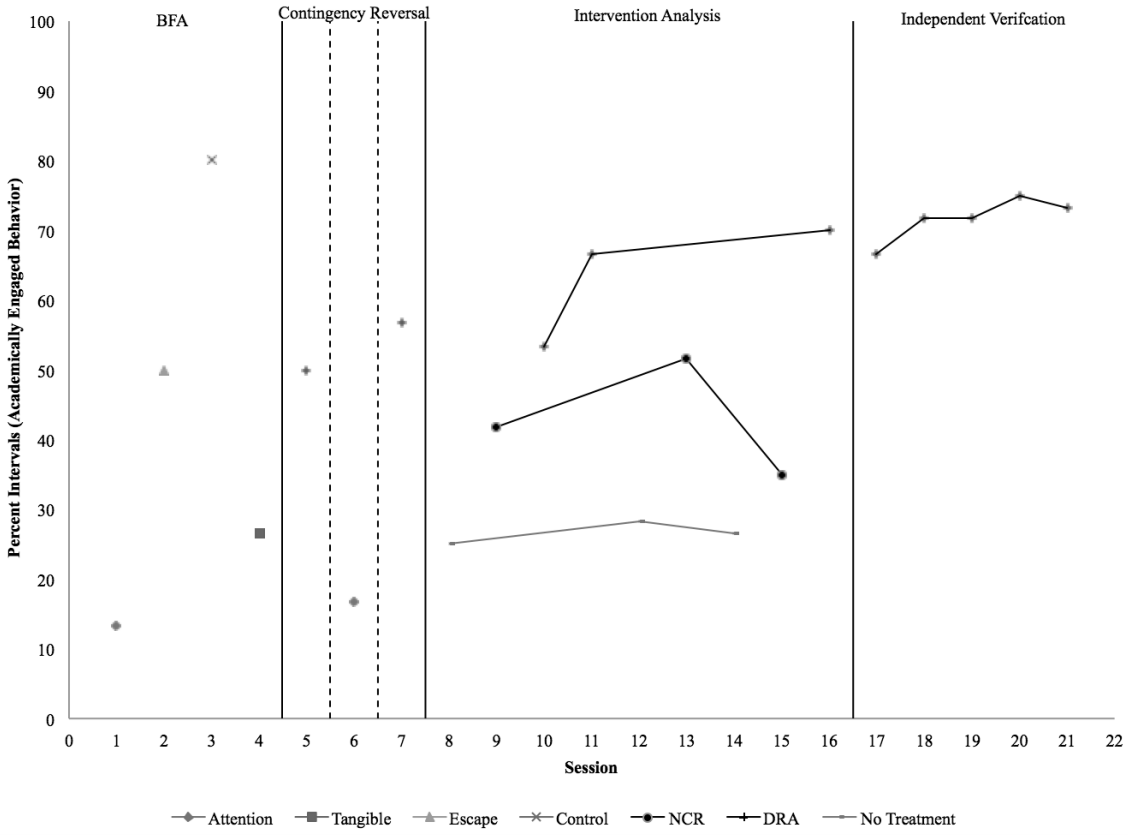

Figure 3.6 Izzy's AEB.

The graph displays Izzy's percent of intervals in which she engaged in academically engaged behaviors

Social Validity

To evaluate social validity of functional analysis and intervention procedures, participants' teachers completed the URP-A following the assessment procedures and the URP-IR upon the completion of data collection. Higher scores indicate a higher rating of social validity. Baxter's teacher's average response rating on the URP-A was 4.67. Lilly's teacher's average response rating on the URP-A was 4.57. Izzy's teacher's average response rating on the URP-A was 3.57. Table 1 displays URP-A rating across factors.

Table 3.1

URP –A Teacher Ratings

Factors	Baxter's teacher	Lilly's teacher	Izzy's teacher	Mean
Acceptability	4.63	4.5	3.38	4.17
Understanding	4.33	5	3.67	4.33
Family-School	3.33	4.67	3	3.67
Feasibility	4.33	4.17	3.17	3.89
School Climate	4.6	4	5	4.53
System Support	5	5	4.67	4.89
Total	4.67	4.57	3.57	4.27

Regarding the URP-IR, Baxter's teacher's rated NCR with an overall score of 4.24 and DRA with an overall score of 4.97 – signifying higher social validity for DRA. Lilly's teacher's rated NCR with an overall score of 3.72 and DRA with an overall score of 5.55 – signifying a higher social validity for DRA. Izzy's teacher's rated NCR with an overall score of 4.76 and DRA with an overall score of 5 – signifying a higher social validity for DRA.

Table 3.2

URP-IR teacher ratings

Factors	Baxter's teacher		Lilly's teacher		Izzy's teacher		Mean	
Intervention	NCR	DRA	NCR	NCR	DRA	DRA	NCR	DRA
Acceptability	4.44	5.44	3.22	4.56	4.78	5.56	4.15	5.19
Understanding	4.67	5.67	4	5	5.67	5.67	4.78	5.45
Home-School	3.33	3	4	5	5	5.67	4.11	4.55
Feasibility	4.33	5.33	3.67	4.33	5	5	4.33	4.89
School Climate	4.6	5.2	4	5	5	6	4.53	5.4
System Support	3.33	3.67	4.33	5.33	5	5.67	4.22	4.89
Total	4.24	4.97	3.72	4.76	5	5.55	4.32	5.09

CHAPTER IV – DISCUSSION

The current study set out to compare antecedent and consequent, function-based, interventions for three Head Start students exhibiting problem behaviors in the classroom. While the literature base is somewhat limited, the FBA process has been successful in preschol settings as an effective practice to address problem behaviors. Previous research has used FBA, and even FA results to create and compare function-based interventions; however, this study adds to the literature in several ways. Where LeGray (2010) and Halphen von Schulz (2012) did find function-based DRA to result in more favorable outcomes for preschoolers when compared to other function-based intervention, the primary goal and dependent variable of those studies included decreasing problem behaviors, this study found DRA as a more effective intervention to increase academically engaged behaviors for preschoolers when compared to other function-based intervention.

Research Questions 1 and 2

The first research question addresses the relative efficacy of the function-based NCR and DRA interventions for decreasing students' problem behavior. For each of the three participants, one intervention did emerge as superior and effective when independently verified. For all three participants, DRA was the superior intervention for decreasing problem behaviors.

These results are consistent with other research indicating the utility of function-based interventions, specifically DRA interventions. Both LeGray (2010) and Halphen von Schulz (2012) had found greater success with DRA interventions for decreasing problem behaviors.

The next research question addresses the relative efficacy of the function-based NCR and DRA interventions for increasing students' academically engaged behavior. For each of the three participants, one intervention did emerge as superior and effective when independently verified. For all three participants, DRA was the superior intervention for increasing academically engaged behaviors. These results also support results found by Halphen von Schulz (2012) in that DRA intervention produced greater success for increasing academically engaged behaviors.

Results from this study are consistent across three participants; for all three participants, DRA produced the greatest reductions in problem behaviors and increases in academically engaged behaviors. It may be that DRA was most effective because reinforcing appropriate behavior and placing problem behavior on extinction more effectively alters behavior than an antecedent intervention that is designed to diminish the reinforcing value of a stimulus. Athough it is impossible to directly measure the reinforcing value of a stimulus, it is possible to measure the effects of a stimulus on behavior. As such, it may be that NCR only mildly weakened the absolute value of the reinforcer. Therefore, the DRA procedure, because it included reinforcement and extinction, was more likely to be effective.

Research Questions 3 and 4

The final two research questions more closely focus on teacher perceptions and ratings of the procedures implemented in order to assess behavior change, rather than the behavior changes themselves. In regards to teachers' ratings of social validity of the assessment procedures, Baxter and Lilly's teachers rated assessment procedures high on the social validity scale, while Izzy's teacher did not rate the social validity of the

assessment procedures as highly. These results are consistent with previous research (Dufrene et al., 2007; LeGray et al., 2010; Poole et al, 2012) in which Head Start teachers rated functional assessment procedures as socially valid. Teachers also rated the social validity of the individual interventions. Teachers rated both interventions with generally favorable ratings; however, all teachers rated DRA at least somewhat higher than NCR. These results are also consistent with previous research in which teachers rate both NCR and DRA as acceptable, with DRA receiving higher acceptability ratings. (Mueller, Edwards, and Trahant, 2003; Halphen-von Schulz, 2014).

Limitations and Conclusions

The current study has some limitations that should be addressed and considered when interpreting results. The current study employs a limited, homegenous sample of four-year olds from two Head Start centers in a rural, Southeastern state – such a sample may limit the extent to which these results extend to other populations. Another possible threat to external validity is that the researcher was present for the assessment and intervention procedures. A highly trained, advanced graduate student under supervision of licensed psychologist was present and prompted the teachers to implement BFA, contingency reversal, and two intervention procedures. Teachers without this intensive level of support may not be able to implement such procedures without such consultation services available.

In this study, for two of the three pariticpants, only three sequences per condition were collected during the ATD phase, which may be a limited smaple of the children's response to the interventions. As a result, the reliability of the findings may be questioned. Future research may include at least five sessions per condition to increase

the believability of the findings. And finally, while there is evidence that BFA often has convergent resuts with other FBA methods, including extended FA procedures, it is a considerable possibility that extended analyses may have different results, informing different treatment procedures.

A final limitation that should be considered is the fact that no procedural integrity data were collected, regarding the researcher's role in the FA and intervention implementation. The researcher prompted teacher implementation of both assessment and intervention procedures, therefore, it would have been beneficial for an indepednent observer to have observed the researcher's procedural integrity in correct prompting procedures.

In conclusion, the current study further supports the use of FBA, particularly BFA, informed interventions in preschool settings. Results for all three participants supported the use of function-based DRA procedures over function-based NCR procedures for reducing a variety of problems and increasing AEB. Furthermore, in addition to producing behavior change, the assessment and intervention procedures were rated as socially valid. Future research should continue comparing function-based interventions for decreasing preschoolers' problem behaviors – although other antecedent and consequent interventions should be included.

APPENDIX A – IRB Approval Letter

THE UNIVERSITY OF
SOUTHERN MISSISSIPPI

INSTITUTIONAL REVIEW BOARD
118 College Drive #5147 | Hattiesburg, MS 39406-0001
Phone: 601.266.5997 | Fax: 601.266.4377 | www.usm.edu/research/institutional.review.board

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
  Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 16101401
PROJECT TITLE: Comparing Treatment Utility of Function-Based Antecedent and Reinforcement Interventions for Increasing Preschoolers' Appropriate Behavior
PROJECT TYPE: New Project
RESEARCHER(S): Ashley N. Murphy
COLLEGE/DIVISION: College of Education and Psychology
DEPARTMENT: Psychology
FUNDING AGENCY/SPONSOR: N/A
IRB COMMITTEE ACTION: Expedited Review Approval
PERIOD OF APPROVAL: 10/31/2016 to 10/30/2017
Lawrence A. Hosman, Ph.D.
Institutional Review Board

APPENDIX B – Functional Assessment Informant Record for Teachers- Preschool Version II

Functional Assessment Informant Record for Teachers - Preschool Version II **FAIR-T P II 1**

Teacher Information **Teacher Name:** _____ School: _____

Please Circle One:

Gender:	Male	Female							Area:	General Education	Special Education									
Race/ Ethnicity:	African American	Asian	Caucasian	Hispanic	Native American	Other _____														
Age:	22-25	26-29	30-33	34-37	42-45	46-49	50-53	54-57	58-61	62-65	66+									
Years Teaching:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20+

Grade Level/Age You Are Teaching (If you teach more than one grade, please circle all that apply):

2 y/o 3 y/o 4 y/o 5 y/o Pre-K K

Highest Degree:	High School	Bachelors	Masters	Doctorate

Experience with Functional Behavior Assessment: 1 = No experience 5 = Very Experienced

1 2 3 4 5

Experience with Classroom Consultants: 1 = No Experience 5 = Very Experienced

1 2 3 4 5

Child Information Child's name: _____

Briefly list below the student's typical daily schedule of activities.

Time	Activity	Time	Activity
____	_____	_____	_____
____	_____	_____	_____
____	_____	_____	_____
____	_____	_____	_____
____	_____	_____	_____

Please indicate good days and times to observe. (At least two observations are needed.)

Observation #1		Observation #2		Observation #3 (Back-up)	
Date:	_____	Date:	_____	Date:	_____
Time:	_____	Time:	_____	Time:	_____

Child Information **Child's Name**: _____

Gender:	Male	Female	Grade: _____	Age: _____

Race/ Ethnicity: African American Asian Caucasian Hispanic Native American Other _____

Classification: General Education Special Education Ruling: _____

Please do not reference the child by name. Please put "he" or "she" or the student's initials.

1. Describe the referred child. What is he/she like in the classroom? (Write down what you believe is the most important information about the referred child.)

_____

_____

_____

Pick a second child of the same sex who is also difficult to teach.

2. What makes the referred child more difficult than the second child?

_____

_____

_____

_____

3. a. Is the child's developmental age consistent with their chronological age? _____

b. What is your estimate of the student's developmental age? _____

4. a. Are the child's social skills age appropriate? _____

b. If there are social skills problems, are there _____

behavioral excesses, deficits, or both? _____

5. a. What percentage of requests will the child comply with the first time asked? _____

b. What percentage of requests will the student eventually comply with? _____

c. When compliant, how accurately does the child complete the request (0% - 100%)? _____

6. Does the child receive any regular medications?

_____ Yes _____ No If yes, briefly explain: _____

7. Does the child have any specific medical concerns?

_____ Yes _____ No If yes, briefly explain: _____

8 Please describe the child's strengths.

_____

_____

9. What procedures have you tried in the past to deal with this child's problem behavior?

_____

_____

10. Have previous procedures been successful? Why? Why not?

_____

_____

11. Describe your current class-wide behavior management plan.

_____

_____

Problem Behaviors

Please circle 1 to 3 problem behaviors and rank the behaviors in order of severity

with 1 being the most severe and 3 being the least severe.

Potential Problem Behaviors (only circle 3; rank in order of severity 1= most; 3 = least)

Aggressive Behavior (e.g., hitting, kicking, pushing others)	1 2 3
Non-compliance (e.g., not following teacher instructions)	1 2 3
Inappropriate Vocalizations (e.g., talking out of turn, inappropriate volume)	1 2 3
Out of seat/area (e.g., out of designated area)	1 2 3
Playing with objects (e.g., playing with non-task related objects)	1 2 3
Disrespectful to adults (e.g., sassing, arguing with adults)	1 2 3
Tantrum (e.g., falling to floor screaming)	1 2 3
Off-task behavior (e.g., not attending to instruction)	1 2 3

Eloping (e.g., leaving the classroom)	1 2 3
Verbal aggression (e.g., verbal threats/insults toward others)	1 2 3
Stereotypy (e.g., hand-flapping, body rocking)	1 2 3
Self-injurious behavior (e.g., head banging, skin picking)	1 2 3
Other _____	1 2 3

---

1. Rate how ***manageable*** the behavior is:

a. Problem Behavior 1	1	2	3	4	5
	Manageable			Unmanageable	
b. Problem Behavior 2	1	2	3	4	5
	Manageable			Unmanageable	
c. Problem Behavior 3	1	2	3	4	5
	Manageable			Unmanageable	

---

2. Rate how ***disruptive*** the behavior is:

a. Problem Behavior 1	1	2	3	4	5
	Mildly				Very

	a. Problem Behavior 2	1 Mildly	2	3	4	5 Very
	a. Problem Behavior 3	1 Mildly	2	3	4	5 Very

---

3. How often does the behavior occur ***per day*** (please circle)?

a. Problem Behavior 1	< 1 - 3	4 - 6	7 - 9	10 - 12	> 13
a. Problem Behavior 2	< 1 - 4	5 - 6	8 - 9	11 - 12	> 14
a. Problem Behavior 3	< 1 - 5	6 - 6	9 - 9	12 - 12	> 15

---

4. How long does the problem behavior last?

a. Problem Behavior 1	< 1 min	1 - 5 min	6 - 10 min	> 10 min
a. Problem Behavior 2	< 1 min	1 - 5 min	6 - 10 min	> 10 min

a. Problem Behavior 3	< 1 min	1 - 5 min	6 - 10 min	> 10 min	

5. How many months has the behavior been present?

a. Problem Behavior 1	< 1	1 - 2	3 - 4	entire school year
a. Problem Behavior 2	< 1	1 - 2	3 - 4	entire school year
a. Problem Behavior 3	< 1	1 - 2	3 - 4	entire school year

6. For each problem behavior, provide an appropriate replacement behavior that you would like the child to exhibit instead of the problem behavior.

a. Problem Behavior 1 _____

a. Problem Behavior 2 _____

a. Problem Behavior 3 _____

Antecedents:

Behavior 1: _____ Behavior 2: _____ Behavior 3: _____

0= never happens 1 = happens a little 2 = happens some 3 = happens very often

		Please circle the corresponding number for each of the three behaviors listed.	Behavior 1	Behavior 2	Behavior 3
I.		**Academic Task Demands**			
	1	Does the behavior occur more often during a certain *type* or activity?	0 1 2 3	0 1 2 3	0 1 2 3
	2	Does the behavior occur more often during *easy* tasks?	0 1 2 3	0 1 2 3	0 1 2 3
	3	Does the behavior occur more often during *difficult* activities?	0 1 2 3	0 1 2 3	0 1 2 3
	4	Does the behavior occur more often during *new* activities?	0 1 2 3	0 1 2 3	0 1 2 3
II.		**Transitions**			
	5	Does the behavior occur more often when a request is made to *stop* an activity?	0 1 2 3	0 1 2 3	0 1 2 3
	6	Does the behavior occur more often when a request is made to *begin a new activity*?	0 1 2 3	0 1 2 3	0 1 2 3
	7	Does the behavior occur more often during *transition* periods?	0 1 2 3	0 1 2 3	0 1 2 3
III.		**Person**			
	8	Does the behavior occur more often with a *specific person*?	0 1 2 3	0 1 2 3	0 1 2 3
	9	Does the behavior occur more often when a *specific person is not there*?	0 1 2 3	0 1 2 3	0 1 2 3
IV.		**Academic Settings**			
	10	Does the behavior occur more often in *large group*?	0 1 2 3	0 1 2 3	0 1 2 3
	11	Does the behavior occur more often in *small group*?	0 1 2 3	0 1 2 3	0 1 2 3

12	Does the behavior occur more often when the child works independently?	0 1 2 3	0 1 2 3	0 1 2 3
13	Does the behavior occur more often in *one-to-one activities*?	0 1 2 3	0 1 2 3	0 1 2 3
V.	**Non-Classroom Settings**			
14	Does the behavior occur more often in the *bathroom*?	0 1 2 3	0 1 2 3	0 1 2 3
15	Does the behavior occur more often on the playground?	0 1 2 3	0 1 2 3	0 1 2 3
16	Does the behavior occur more often in the *cafeteria*?	0 1 2 3	0 1 2 3	0 1 2 3
17	Does the behavior occur more often on the *bus*?	0 1 2 3	0 1 2 3	0 1 2 3
18	Does the behavior occur more often in *other situations*? Specify other: _____	0 1 2 3	0 1 2 3	0 1 2 3
VI. Presentation Style				
19	Does the behavior occur more often when instructions/tasks are presented *verbally*?	0 1 2 3	0 1 2 3	0 1 2 3
20	Does the behavior occur more often during motor activities?	0 1 2 3	0 1 2 3	0 1 2 3
21	Does the behavior occur more often when instructions/tasks are presented *visually*?	0 1 2 3	0 1 2 3	0 1 2 3
VII. Time of Day				
22	Does the behavior occur more often when the student arrives at school (before breakfast)?	0 1 2 3	0 1 2 3	0 1 2 3
23	Does the behavior occur more during nap time?	0 1 2 3	0 1 2 3	0 1 2 3
24	Does the behavior occur more near the end of the day?	0 1 2 3	0 1 2 3	0 1 2 3
VIII. Other				

	25	Does the behavior occur more often when a ***disruption*** occurs in the normal routine?	0 1 2 3	0 1 2 3	0 1 2 3
	26	Does the behavior occur more often when the child's ***has been told no***?	0 1 2 3	0 1 2 3	0 1 2 3
	27	Are there any other behaviors that usually ***precede*** the problem behavior?	0 1 2 3	0 1 2 3	0 1 2 3
	28	Is there anything you could do that would ***ensure*** the occurrence of the behavior?	0 1 2 3	0 1 2 3	0 1 2 3
	29	Are there any events occurring in the child's home that seem to ***precede*** the occurrence of the behavior at school?	0 1 2 3	0 1 2 3	0 1 2 3

Consequences:

Please circle the corresponding number for each of the three behaviors listed.			Behavior 1	Behavior 2	Behavior 3
I.		**Positive Reinforcement: Access to Activities and Items**			
	1	Does someone provide the child with access to an activity after the behavior has occurred?	0 1 2 3	0 1 2 3	0 1 2 3
	2	Does someone provide the child with access to a toy or item after the behavior? has occurred?	0 1 2 3	0 1 2 3	0 1 2 3
	3	Does the child take possession of a toy or item during or after the behavior occurs?	0 1 2 3	0 1 2 3	0 1 2 3
	4	Does the child acquire access to an activity after the behavior has occurred the behavior has occurred?	0 1 2 3	0 1 2 3	0 1 2 3
II.		**Negative Reinforcement: Escape, Delay, Reduction or Avoidance of Demands**			
	5	Are on-going activity demands terminated during or after the behavior has occurred?	0 1 2 3	0 1 2 3	0 1 2 3
	6	Are on-going activity demands reduced during or after the behavior has occurred?	0 1 2 3	0 1 2 3	0 1 2 3
	7	Is the start of a new activity delayed after the behavior has occurred?	0 1 2 3	0 1 2 3	0 1 2 3

	8	Is the start of a new activity completely avoided as a result of the behavior?	0 1 2 3	0 1 2 3	0 1 2 3
	9	Are activities ever altered or changed as a result of the behavior?	0 1 2 3	0 1 2 3	0 1 2 3
III.		**Positive Reinforcement: Access to Attention**			
	10	Does the child receive positive attention from peers during or after the behavior is exhibited?	0 1 2 3	0 1 2 3	0 1 2 3
	11	Does the child receive negative attention from peers during or after the behavior is exhibited?	0 1 2 3	0 1 2 3	0 1 2 3
	12	Does the child receive positive attention from teachers during or after the behavior is exhibited?	0 1 2 3	0 1 2 3	0 1 2 3
	13	Does the child receive negative attention from teachers during or after the behavior is exhibited?	0 1 2 3	0 1 2 3	0 1 2 3
	14	Does the teacher re-direct the child during or after the behavior is exhibited?	0 1 2 3	0 1 2 3	0 1 2 3
	15	Does the teacher interrupt the child while the behavior is being exhibited?	0 1 2 3	0 1 2 3	0 1 2 3
	16	Is the child comforted by an adult during or after the behavior has occurred?	0 1 2 3	0 1 2 3	0 1 2 3
	17	Is the child restrained by an adult during or after the behavior has occurred?	0 1 2 3	0 1 2 3	0 1 2 3
IV.		**Negative social reinforcement**			
	18	Are ongoing social interactions with teachers terminated during or after the behavior is exhibited?	0 1 2 3	0 1 2 3	0 1 2 3
	19	Are upcoming social interactions with teachers avoided after the behavior is exhibited?	0 1 2 3	0 1 2 3	0 1 2 3
	20	Are ongoing social interactions with peers terminated during or after the behavior is exhibited?	0 1 2 3	0 1 2 3	0 1 2 3

	21	Are upcoming social interactions with peers avoided after the behavior is exhibited?	0 1 2 3	0 1 2 3	0 1 2 3
V.		**Automatic Reinforcement**			
	22	Does the student exhibit the behavior when alone?	0 1 2 3	0 1 2 3	0 1 2 3
	23	Does the student appear to become calm or relaxed shortly following the behavior?	0 1 2 3	0 1 2 3	0 1 2 3
	24	Does the student appear to become excited or aroused shortly following the behavior?	0 1 2 3	0 1 2 3	0 1 2 3
VI.		**Other Problems**			
	25	Are there other problem behaviors that often occur after the behavior is exhibited? If yes, describe: _____	0 1 2 3	0 1 2 3	0 1 2 3
VII. Intervention					
	26	Does the student typically receive praise or any rewards when behavior occurs that you would like to see instead of the problem behavior? If yes, describe:	0 1 2 3	0 1 2 3	0 1 2 3

APPENDIX C Usage Rating Profile-Assessment

URP-Assessment+

Directions: Consider the described assessment when answering each of the following statements. Circle the number that best reflects your agreement with the statement, using the scale provided below.

		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
1.	This assessment is an effective choice for understanding a variety of problems.	1	2	3	4	5	6
2.	I would need additional resources to carry out this assessment.	1	2	3	4	5	6
3.	I would be able to allocate my time to implement this assessment.	1	2	3	4	5	6
4.	I understand how to use this assessment.	1	2	3	4	5	6
5.	A positive home-school relationship is needed to use this assessment.	1	2	3	4	5	6
6.	I am knowledgeable about the assessment procedures.	1	2	3	4	5	6
7.	The assessment is a fair way to evaluate the child's behavior problem.	1	2	3	4	5	6
8.	The total time required to implement the assessment procedures would be manageable.	1	2	3	4	5	6
9.	I would not be interested in implementing this assessment.	1	2	3	4	5	6
10.	My administrator would be supportive of my use of this assessment.	1	2	3	4	5	6
11.	I would have positive attitudes about implementing this assessment.	1	2	3	4	5	6
12.	This is a good way to assess the child's behavior problem.	1	2	3	4	5	6
13.	Preparation of materials needed for this assessment would be minimal.	1	2	3	4	5	6
14.	Use of this assessment would be consistent with the mission of my school.	1	2	3	4	5	6

USAGE RATING PROFILE

		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
15.	Parental collaboration is required in order to use this assessment.	1	2	3	4	5	6
16.	Material resources needed for this assessment are reasonable.	1	2	3	4	5	6
17.	I would implement this assessment with a good deal of enthusiasm.	1	2	3	4	5	6
18.	This assessment is too complex to carry out accurately.	1	2	3	4	5	6
19.	These assessment procedures are consistent with the way things are done in my system.	1	2	3	4	5	6
20.	Use of this assessment would not be disruptive to students.	1	2	3	4	5	6
21.	I would be committed to carrying out this assessment.	1	2	3	4	5	6
22.	The assessment procedures easily fit in with my current practices.	1	2	3	4	5	6
23.	I would need consultative support to implement this assessment.	1	2	3	4	5	6
24.	I understand the procedures of this assessment.	1	2	3	4	5	6
25.	My work environment is conducive to implementation of an assessment like this one.	1	2	3	4	5	6
26.	The amount of time required for record keeping would be reasonable.	1	2	3	4	5	6
27.	Regular home-school communication is needed to implement these assessment procedures.	1	2	3	4	5	6
28.	I would require additional professional development in order to implement this assessment.	1	2	3	4	5	6

APPENDIX D Usage Rating Profile- Intervention (Revised)

URP Intervention-

Directions: Consider the described intervention when answering the following statements. Circle the number that best reflects your agreement with the statement, using the scale provided below.

		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
1.	This intervention is an effective choice for addressing a variety of problems.	1	2	3	4	5	6
2.	I would need additional resources to carry out this intervention.	1	2	3	4	5	6
3.	I would be able to allocate my time to implement this intervention.	1	2	3	4	5	6
4.	I understand how to use this intervention.	1	2	3	4	5	6
5.	A positive home-school relationship is needed to implement this intervention.	1	2	3	4	5	6
6.	I am knowledgeable about the intervention procedures.	1	2	3	4	5	6
7.	The intervention is a fair way to handle the child's behavior problem.	1	2	3	4	5	6
8.	The total time required to implement the intervention procedures would be manageable.	1	2	3	4	5	6
9.	I would not be interested in implementing this intervention.	1	2	3	4	5	6
10.	My administrator would be supportive of my use of this intervention.	1	2	3	4	5	6
11.	I would have positive attitudes about implementing this intervention.	1	2	3	4	5	6
12.	This intervention is a good way to handle the child's behavior problem.	1	2	3	4	5	6
13.	Preparation of materials needed for this intervention would be minimal.	1	2	3	4	5	6

USAGE RATING PROFILE

		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
14.	Use of this intervention would be consistent with the mission of my school.	1	2	3	4	5	6
15.	Parental collaboration is required in order to use this intervention.	1	2	3	4	5	6
16.	Implementation of this intervention is well matched to what is expected in my job.	1	2	3	4	5	6
17.	Material resources needed for this intervention are reasonable.	1	2	3	4	5	6
18.	I would implement this intervention with a good deal of enthusiasm.	1	2	3	4	5	6
19.	This intervention is too complex to carry out accurately.	1	2	3	4	5	6
20.	These intervention procedures are consistent with the way things are done in my system.	1	2	3	4	5	6
21.	This intervention would not be disruptive to other students.	1	2	3	4	5	6
22.	I would be committed to carrying out this intervention.	1	2	3	4	5	6
23.	The intervention procedures easily fit in with my current practices.	1	2	3	4	5	6
24.	I would need consultative support to implement this intervention.	1	2	3	4	5	6
25.	I understand the procedures of this intervention.	1	2	3	4	5	6
26.	My work environment is conducive to implementation of an intervention like this one.	1	2	3	4	5	6
27.	The amount of time required for record keeping would be reasonable.	1	2	3	4	5	6
28.	Regular home-school communication is needed to implement intervention procedures.	1	2	3	4	5	6
29.	I would require additional professional development in order to implement this intervention.	1	2	3	4	5	6

USAGE RATING PROFILE

APPENDIX E Preference Assessment Protocol

Student Name: _____ Teacher: _____

Session: _____ Date: _____

PREFERENCE ASSESSMENT

Setting:	Classroom
Materials:	Child's preferred items/toys. Have all preferred items present.

Procedures:

1. Prior to the session, the teacher will identify six highly preferred tangible items. Items will be presented in an array placed in front of the child.

2. Say, "[Child's name], what would you like to play with, pick one"

3. If the client makes a choice, say, "Good job choosing" and then allow them to play with the item for one minute.

4. Selected items are not replaced.

5. From the remaining items, randomize the order of remaining stimuli and reposition all items into a new array.

6. If no choice is made, follow step 5 and present a new trial.

Continue following steps 2-5 until either all items are selected, or there are three consecutive trials with no choice. For the latter, code all remaining trials and items as "not selected."

APPENDIX F FA Tangible Protocol

Student Name: _____ Teacher: _____

Session: _____ Date: _____

Condition: TANGIBLE

Operational Definition and Measurement of Target Behaviors

Target Behavior: Identified through consultation with teachers

Definition: Based on the topography of the problem behavior

Dependent Measure: Momentary Time Sampling

Data Collection Procedures and Other Behavioral Definitions

Target Behavior: Momentary Time Sampling

Session Duration: 10 minutes

Setting: Classroom

Type of activity: Determined through consultation with teachers

Materials: Child's preferred item/toy (allow the student free access). Have all preferred items present.

Procedures:

1) Say, "[Child's name], would you like to play with _____?"

2) Interact with the target child for 2 minutes or until he or she is engaged with the preferred item.

3) After the child is engaged with the preferred item, take the item away and place it in the child's view but out of his or her reach.

4) Instruct the child to sit in his or her assigned seat [present class activity that in the past has been related to the occurrence of the target behavior].

5) Say "[Child's Name], it's time to listen and do some work."

6) The teacher will then begin the activity that in the past has been related to the occurrence of the target behavior.

7) Contingent on occurrence of the target behavior:
    a. Present the child with the preferred item for a period of 30 seconds.

8) Do not respond to any other problem behavior.

APPENDIX G FA Attention Protocol

Student Name: _____ Teacher: _____

Session: _____ Date: _____

Condition: ATTENTION

Operational Definition and Measurement of Target Behaviors

Target Behavior: Identified through consultation with teachers

Definition: Based on the topography of the problem behavior

Dependent Measure: Momentary Time Sampling

Data Collection Procedures and Other Behavioral Definitions

Target Behavior: Momentary Time Sampling

Session Duration: 10 minutes

Setting: Classroom

Type of activity: Determined through consultation with teachers

Materials: Task-related items

Procedures:

1. Instruct the child to sit in the designated area. [Present class activity that in the past has been related to the occurrence of the target behavior].

1. Say "[Child's Name], it's time to listen and do some work."

2. Divert your attention from the child to other work (e.g., desk work, assisting other children).

5. Contingent on each occurrence of target behavior:

- Provide a disapproving comment (or specific type of attention identified in the descriptive analysis)
- Interact with the student for 30 seconds.
- Then divert your attention again back to the work at your desk.

6. Do not respond to any other problem behavior.

APPENDIX H FA Escape Protocol

Student Name: _____ Teacher: _____

Session: _____ Date: _____

Condition: ESCAPE

Operational Definition and Measurement of Target Behaviors

Target Behavior: Identified through consultation with teachers

Definition: Based on the topography of the problem behavior

Dependent Measure: Momentary Time Sampling

Data Collection Procedures and Other Behavioral Definitions

Target Behavior: Momentary Time Sampling

Session Duration: 10 minutes

Setting: Classroom

Type of activity: Determined through consultation with teachers

Materials: Any Work-related Materials

Procedures:

1. Instruct the child to sit in his or her designated area.

2. Say "[Child's Name], it's time to listen and do some work."

3. Teacher will present student with instructions typical of the academic activity.

[Present class activity that in the past has been related to the occurrence of the

target behavior].

4. Wait 5 seconds for independent initiation of activity

- If student independently initiates task, the teacher will provide praise and deliver next command as needed.
- If student does not initiate within 5 seconds, the teacher will use a verbal and gestural prompt (for example, say "[student, answer the question.]" while pointing to the teacher) and wait 5 seconds for initiation.
    - If student complies with the verbal/gestural prompt within 5 seconds, the teacher will provide praise and move to the next command as needed.
    - If the student does not comply within 5 seconds, the teacher will use physical guidance to have student comply (e.g., say, "Student, answer the question," while using gestural prompts to assist in handing you the pencil.)
        - DO NOT PRAISE STUDENT IF PHYSICAL GUIDANCE IS NEEDED.

5. Contingent on each occurrence of target behavior:

- Remove work-related materials and provide a 30 second break.
- Repeat the instruction after the 30 second break.
- DO NOT PROVIDE STUDENT WITH ANY ATTENTION.

6. Contingent on compliance with a verbal or verbal and gestural prompt:

a. Provide descriptive praise
b. REMEMBER: Do not provide praise if physical guidance was required.
c. Point to the next problem and repeat instruction.

Do not respond to any other problem behavior.

APPENDIX I FA Control Protocol

Student Name: _____ Teacher: _____

Session: _____ Date: _____

Condition: CONTROL

Operational Definition and Measurement of Target Behaviors

Target Behavior: Identified through consultation with teachers

Definition: Based on the topography of the problem behavior

Dependent Measure: Momentary Time Sampling

Data Collection Procedures and Other Behavioral Definitions

Target Behavior: Momentary Time Sampling

Session Duration: 10 minutes

Setting: Classroom

Type of activity: Preferred toy (e.g., magazines, puzzles, books)

Materials: Student's preferred materials/toys (allow the student free access). Have all preferred items present.

Procedures:

1. Say, "[Student's name], would you like to play with these _____?"
2. Seat student at the designated area.
3. Interact with the student by providing a neutral comment every 30 seconds or by responding to each appropriate response from the student.
4. Provide descriptive praise for appropriate nonacademic activity engagement.
5. Provide any assistance necessary using a least-to-most prompt for appropriate toy play if requested or needed.

Do not respond to any problem behavior.

APPENDIX J Contingency Reversal Protocol

Student: _____ Teacher:_____

Session: _____ Date: _____

Operational Definition and Measurement of Target Behaviors

Target Behavior: Identified through consultation with teachers

Definition: Based on the topography of the problem behavior

Dependent Measure: Momentary Time Sampling

Data Collection Procedures and Other Behavioral Definitions

Target Behavior: Momentary Time Sampling

Session Duration: 10 minutes

Setting: Classroom

Type of activity: Identified through consultation with teachers

Materials: Any Work-related Materials

Procedures: Designed after the identification of the functional analysis condition with the highest occurrence of problem behavior

APPENDIX K NCR Protocol

Student Name: _____ Teacher: _____

Session: _____ Date: _____

Protocol: NCR

Operational Definition and Measurement of Target Behaviors

Target Behavior: Identified through consultation with the teacher

Definition: Developed based on the topography of the problem behavior

Dependent Measure: Momentary Time Sampling

Data Collection Procedures and Other Behavioral Definitions

Target Behavior: Momentary Time Sampling

Session Duration: 10 minutes

Setting: Classroom

Type of activity: Identified through consultation with teachers

Materials: Any Work-related Materials

Procedures:

1. When the NCR component of the intervention begins, the teacher will engage in his/her student with assessment-identified reinforcer for 6.5 minutes.

2. If the child of interest engages in the targeted inappropriate behavior during the 6.5 minutes, the teacher will continue to provide the identified forms of reinforcement.

3. Upon completion of 6.5 minutes NCR period, the teacher will engage in his/her scheduled instruction.

Reinforcement will be withheld during instruction regardless of student behavior.

APPENDIX L DRA Protocol

Student Name: _____ Teacher: _____

Session: _____ Date: _____

Protocol: DRA

Operational Definition and Measurement of Target Behaviors

Target Behavior: Identified through consultation with the teacher

Definition: Developed based on the topography of the problem behavior

Dependent Measure: Momentary Time Sampling

Data Collection Procedures and Other Behavioral Definitions

Target Behavior: Moment Time Sampling

Session Duration: 10 minutes

Setting: Classroom

Type of activity: Identified through consultation with teachers

Materials: Any Work-related Materials

Procedures:

1. When the DRA component of the intervention begins, the teacher will engage in his/her scheduled instruction.

2. If the child of interest engages in the targeted inappropriate behavior, the teacher will withhold all previously identified forms of reinforcement.

3. If the child of interest engages in the identified appropriate replacement behavior, the teacher will then present that student with the identified form of reinforcement.

Reinforcement will be withheld following the occurrence of any behavior except the targeted appropriate replacement behavior.

APPENDIX M Treatment Integrity for FA Tangible Condition

Student: _____ Session: _____

Teacher: _____ Date: _____

Observer: _____ Condition: TANGIBLE

This form is used to assess the level of procedural integrity for each implemented functional analysis tangible condition. Record if the researcher behaviors were implemented as planned (Yes) or not implemented as planned (No) during each FA control condition.

	YES	NO	N/A
1. Teacher allows participant to manipulate preferred item for 2 minutes prior to session beginning.	____	____	____
2. Teacher removes preferred item from participant.	____	____	____
3. Participant is seated in their assigned seat.	____	____	____
4. Teacher has restricted student access to preferred items available in the classroom	____	____	____
5. Teacher presents the student with identified activity	____	____	____
6. Contingent on problem behavior, teacher presents student with preferred item for 30 seconds	____	____	____
7. Teacher does not respond to other problem behavior	____	____	____
8. Teacher does not present academic demands to the student	____	____	____
• Repeated steps 3-5 for each 30 second interval	____	____	____

APPENDIX N Treatment Integrity for FA Attention Condition

Student: _____ Session: _____

Teacher: _____ Date: _____

Observer: _____ Condition: ATTENTION

This form is used to assess the level of procedural integrity for implemented functional analysis attention condition. Record if the researcher behaviors were implemented as planned (Yes) or not implemented as planned (No) during each FA attention condition.

	YES	NO	N/A
1. Participant is seated in the designated area of target activity	____	____	____
2. Teacher presents task-related items to child	____	____	____
4. Teacher interacts with the student until the student engages in the task	____	____	____
5. Teacher says, "It's time to start the activity, it's time to listen and do some work"	____	____	____
6. Teacher diverts attention to his/her work materials	____	____	____
7. Contingent on student exhibiting target behavior			
a. Teacher provides a disapproving comment	____	____	____
b. Interacts with the student for 30 seconds	____	____	____
c. Following 30 seconds of interaction, teacher diverts his/her attention back to the work materials	____	____	____
8. Teacher does not respond to any other problem behavior	____	____	____
• Repeated steps 3-5 for each 30 second interval	____	____	____

APPENDIX O – Treatment Integrity for FA Escape Condition

Student: _____ Session: _____

Teacher: _____ Date: _____

Observer: _____ Condition: ESCAPE

This form is used to assess the level of procedural integrity for each implemented functional analysis escape condition. Record if the researcher behaviors were implemented as planned (Yes) or not implemented as planned (No) during each FA demand condition.

	YES	NO	N/A
1. Participant is within designated area of target activity	____	____	____
2. Teacher presents student with identified task demand s	____	____	____
3. Teacher provides verbal instructions to student to complete the identified task	____	____	____
4. Teacher waits 5 seconds for compliance	____	____	____
a. The student complies	____	____	____
i. Teacher provides descriptive praise	____	____	____
ii. Teacher moves to the next demand	____	____	____
b. The student does not comply within 5 seconds	____	____	____
i. Teacher restates the instructions with verbal and gestural prompts	____	____	____
ii. Teacher waits 5 seconds for compliance	____	____	____
A. Student complies			
1. Teacher provides descriptive			

praise ____ ____ ____

2. Teacher moves to the next demand____ ____ ____

B. Student does not comply

1. Teacher restates the instructions and provides hand-over-hand

guidance ____ ____ ____

5. Teacher does not respond to any other problem behavior ____ ____ ____

6. When student exhibits problem behavior

a. Teacher removes task demand for 30 seconds ____ ____ ____

b. After 30 seconds, teacher represents the task demand ____ ____ ____

- Repeated steps 3-5 for each 30 second interval ____ ____ ____

APPENDIX P Treatment Integrity for FA Control Condition

Student: _____ Session: _____

Teacher: _____ Date: _____

Observer: _____ Condition: CONTROL

This form is used to assess the level of procedural integrity for each implemented functional analysis control condition. Record if the researcher behaviors were implemented as planned (Yes) or not implemented as planned (No) during each FA control condition.

	YES	NO	N/A
1. Participant is within designated area of target activity	____	____	____
2. Teacher provided student with access to preferred materials available in the classroom	____	____	____
3. Teacher provides neutral attention every 30 seconds	____	____	____
4. Teacher does not respond to problem behavior	____	____	____
5. Teacher does not present academic demands to the student	____	____	____
Repeated steps 3-5 for each 30 second interval	____	____	____

APPENDIX Q Treatment Integrity for NCR Session

Student: _____ Session: _____

Teacher: _____ Date: _____

Observer: _____ Protocol: NCR

This form is used to assess the level of procedural integrity for each step implemented of the antecedent based intervention. Record if the teacher behaviors were implemented as planned (Yes) or not implemented as planned (No) during each group instruction session.

	YES	NO	N/A
1. Teacher presents the identified reinforcer responsible for maintaining the problem behavior for 6.5 minutes prior to session, regardless of the individual's behavior.	____	____	____
2. The identified form of reinforcement was withheld during the 10 minute session.	____	____	____
3. Teacher presents relevant classroom activities throughout the 10 minute session.	____	____	____

APPENDIX R Treatment Integrity for DRA Session

Student: _____ Session: _____

Teacher: _____ Date: _____

Observer: _____ Protocol: DRA

This form is used to assess the level of procedural integrity for each implemented DRA intervention. Record if the teacher behaviors were implemented as planned (Yes) or not implemented as planned (No) during each group instruction session.

	YES	NO	N/A
4. Following the occurrence of the targeted inappropriate behavior, reinforcement was withheld.	____	____	____
5. Following a ___ second absence of the targeted inappropriate behavior and at least one occurrence of the identified appropriate replacement behavior, reinforcement was provided	____	____	____
6. The identified form of reinforcement was withheld following any other behaviors.	____	____	____

APPENDIX S Treatment Integrity for No Treatment Session

Student: _____ Session: _____

Teacher: _____ Date: _____

Observer: _____ Protocol: No treatment

This form is used to assess the level of procedural integrity for the control condition. Record if the teacher behaviors were implemented as planned (Yes) or not implemented as planned (No) during each group instruction session.

	YES	NO	N/A
1. Researcher reminded the teacher to only use typical teaching techniques	____	____	____
2. Teacher maintained normal teaching methods and classroom management techniques	____	____	____
3. Teacher refrained from using DRO or DRA during the session	____	____	____

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